

ASNR Journal Search

A selection of recent papers in the area of neurorehabilitation, not meant to be comprehensive, and not including the contents of *Neurorehabilitation and Neural Repair*. If you have suggestions for the next issue, please e-mail them to pnarayanan@som.umaryland.edu. Thanks!

Stroke and general research of interest

Section Editor: Lauren Jones-Lush, Priya Narayanan

Moore JL, Roth EJ, Killian C, Hornby TG. (2009) Locomotor training improves daily stepping activity and gait efficiency in individuals poststroke who have reached a "plateau" in recovery. *Stroke*. 2010 Jan;41(1):129-35. Epub 2009 Nov 12.

<http://stroke.ahajournals.org/cgi/reprint/STROKEAHA.109.563247v1>

Sousa CO, Barela JA, Prado-Medeiros CL, Salvini TF, Barela AM. (2009) The use of body weight support on ground level: an alternative strategy for gait training of individuals with stroke. *J Neuroeng Rehabil.*;6:43.

<http://www.jneuroengrehab.com/content/pdf/1743-0003-6-43.pdf>

Jaspers E, Desloovere K, Bruyninckx H, Molenaers G, Klingels K, Feys H. (2009) Review of quantitative measurements of upper limb movements in hemiplegic cerebral palsy. *Gait Posture*. 2009 Nov;30(4):395-404. Epub 2009 Aug 12.

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T6Y-4X076TY-2&_user=2854086&_coverDate=11%2F30%2F2009&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&_view=c&_searchStrId=1209078594&_rerunOrigin=google&_acct=C000049426&_version=1&_urlVersion=0&_userid=2854086&md5=7d3a6ae501e0de2cad78ba7a70788bd7

Said CM, Galea M, Lythgo N. (2009) Obstacle crossing performance does not differ between the first and subsequent attempts in people with stroke. *Gait Posture*. 2009 Nov;30(4):455-8. Epub 2009 Aug 4.

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Clark DJ, Ting LH, Zajac FE, Neptune RR, Kautz SA. (2009) Merging of healthy motor modules predicts reduced locomotor performance and muscle coordination complexity post-stroke. *J Neurophysiol*. 2010 Feb;103(2):844-57. Epub 2009 Dec 9.

<http://jn.physiology.org/cgi/content/abstract/00825.2009v1>

Kwak Y, Müller ML, Bohnen NI, Dayalu P, Seidler RD. (2009) Effect of Dopaminergic Medications on the Time Course of Explicit Motor Sequence Learning in Parkinson's Disease. *J*

Neurophysiol. 2010 Feb;103(2):942-9. Epub 2009 Dec 16.

<http://jn.physiology.org/cgi/reprint/00197.2009v1>

Kalra L. (2009) Stroke rehabilitation 2009: old chestnuts and new insights. Stroke. 2010 Feb;41(2):e88-90. Epub 2010 Jan 14.

<http://stroke.ahajournals.org/cgi/reprint/41/2/e88>

Jiang Q, Zhang ZG, Chopp M. (2009). MRI of stroke recovery. Stroke. 2010 Feb;41(2):410-4. Epub 2009 Dec 24.

<http://stroke.ahajournals.org/cgi/reprint/STROKEAHA.109.568048v1>

McArthur K, Lees KR. (2009). Advances in emerging therapies 2009. Stroke. 2010 Feb;41(2):e67-70. Epub 2010 Jan 14.

<http://stroke.ahajournals.org/cgi/reprint/41/2/e67>

Fishell G, Goldman JE. (2009). A silver lining to stroke: does ischemia generate new cortical interneurons? Nat Neurosci. 2010 Feb;13(2):145-6.

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Ohira K, Furuta T, Hioki H, Nakamura KC, Kuramoto E, Tanaka Y, Funatsu N, Shimizu K, Oishi T, Hayashi M, Miyakawa T, Kaneko T, Nakamura S. (2009). Ischemia-induced neurogenesis of neocortical layer 1 progenitor cells. Nat Neurosci. 2010 Feb;13(2):173-9. Epub 2009 Dec 27.

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<http://download.journals.elsevierhealth.com/pdfs/journals/0003-9993/PIIS0003999309007631.pdf>

Jung T, Lee D, Charalambous C, Vrongistinos K. (2009). The influence of applying additional weight to the affected leg on gait patterns during aquatic treadmill walking in people poststroke. Arch Phys Med Rehabil. 2010 Jan;91(1):129-36.

<http://download.journals.elsevierhealth.com/pdfs/journals/0003-9993/PIIS0003999309007680.pdf>

Stoeckel MC, Binkofski F. (2010) The role of ipsilateral primary motor cortex in movement control and recovery from brain damage. Exp Neurol. 2010 Jan;221(1):13-7. Epub 2009 Nov 4.

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Martí-Fàbregas J, Romaguera-Ros M, Gómez-Pinedo U, Martínez-Ramírez S, Jiménez-Xarrié E, Marín R, Martí-Vilalta JL, García-Verdugo JM. (2010) Proliferation in the human ipsilateral subventricular zone after ischemic stroke. *Neurology*. 2010 Feb 2;74(5):357-65. Epub 2010 Jan 6.

<http://www.neurology.org/cgi/content/abstract/74/5/357>

Pyne-Geithman G. (2010) Brain, heal thyself! Neuroregeneration in the subventricular zone after ischemic stroke. *Neurology*. 2010 Feb 2;74(5):352-3. Epub 2010 Jan 6.

<http://www.neurology.org/cgi/content/citation/74/5/352>

Multiple Sclerosis

Section Editor: Victor W Mark

1. Mehta LR, McDermott MP, Goodman AD, Schwid SR. A randomized trial of memantine as treatment for spasticity in multiple sclerosis. *Mult Scler* 2010; 16:248-51.
Abstract: We report the results of a single center randomized, double-blind, placebo-controlled, parallel group trial of memantine in adults with multiple sclerosis and spasticity conducted over 12 weeks. Eligible MS patients had to have an Ashworth spasticity rating of 2 or higher in at least one lower extremity muscle group. Subjects were randomized to receive either placebo or memantine 10 mg twice a day. The primary outcome measure for efficacy was the change in Ashworth Spasticity Scale Score. Although well tolerated, memantine treatment did not demonstrate efficacy in treatment of spasticity in this 12-week small exploratory study.
<http://msj.sagepub.com/cgi/rapidpdf/1352458509355462v1>
2. Ozturk A, Smith SA, Gordon-Lipkin EM et al. MRI of the corpus callosum in multiple sclerosis: association with disability. *Mult Scler* 2010; 16:166-77.
Inflammatory demyelination and axon damage in the corpus callosum are prominent features of multiple sclerosis (MS) and may partially account for impaired performance on complex tasks. The objective of this article was to characterize quantitative callosal MRI abnormalities and their association with disability. In 69 participants with MS and 29 healthy volunteers, lesional and extralesional callosal MRI indices were estimated via diffusion tensor tractography. Expanded disability status scale (EDSS) and MS functional composite (MSFC) scores were recorded in 53 of the participants with MS. All tested callosal MRI indices were diffusely abnormal in MS. EDSS score was correlated only with age ($r = 0.51$). Scores on the overall MSFC and its paced serial auditory addition test (PASAT) and 9-hole peg test components were correlated with callosal fractional anisotropy ($r = 0.27, 0.35, \text{ and } 0.31$, respectively) and perpendicular diffusivity ($r = -0.29, -0.30, \text{ and}$

—031) but not with overall callosal volume or callosal lesion volume; the PASAT score was more weakly correlated with callosal magnetization-transfer ratio ($r = 0.21$). Anterior callosal abnormalities were associated with impaired PASAT performance and posterior abnormalities with slow performance on the 9-hole peg test. In conclusion, abnormalities in the corpus callosum can be assessed with quantitative MRI and are associated with cognitive and complex upper-extremity dysfunction in MS.

<http://msj.sagepub.com/cgi/reprint/16/2/166>

3. Patti F, Pappalardo A, Longo L et al. Effects on disability of inpatient versus outpatient rehabilitation for people with multiple sclerosis: a randomized study [abstract]. *Int J MS Care* 2010; 11:43.

Introduction In recent years, interest has grown in neurorehabilitation for people affected by multiple sclerosis (MS). It has been clearly demonstrated that neurorehabilitation can reduce disability and improve quality of life in MS.

Rehabilitation settings include home-based, hospital inpatient, hospital outpatient, and ambulatory-based services. The aim of this study was to compare the effects of two different neurorehabilitation settings, inpatient and outpatient, on disability in MS patients.

Methods A randomized controlled trial was conducted involving patients with progressive and relapsing MS who were referred to the Multiple Sclerosis Center of Catania University, Italy. We selected 90 patients, but the randomization was carried out for only 72 patients, because 8 did not join the study, 6 refused the hospital setting, and 4 had concomitant diseases. Of the 72 patients, 24 were randomly assigned to the inpatient treatment group (Group A), 24 to the outpatient treatment group (Group B), and 24 to the control group (Group C). The three groups were well matched for age, disease duration, and severity of disability, as measured by the Expanded Disability Status Scale (EDSS) and the Functional Independence Measure (FIM). Patients in Groups A and B were treated for 6 consecutive weeks, 5 days a week. Patients in Group A were treated twice a day, in the morning and in the afternoon; patients in Group B were treated once a day, in the morning. Patients in Group C did not receive rehabilitative therapy and were placed on the waiting list. All therapists were previously trained in order to administer homogeneous treatment. Each rehabilitative program was tailored to the individual on a multidisciplinary basis. The rehabilitative plan was created before starting treatment with specific ad hoc meetings including the patient, neurologist, physiatrist, physical therapist, speech therapist, occupational therapist, and psychologist. All patients were evaluated at enrollment (T0) and at discharge after 6 weeks (T1). FIM variation was used as an outcome measure. All statistical analyses were performed using the Wilcoxon signed rank test. In addition, patients were asked for their assessment of the effects of treatment (subjective improvement vs. no improvement).

Results In the two treatment groups, the mean \pm SD total FIM score increased from 91.0 ± 10.3 to 98.3 ± 15.5 in Group A ($P = .01$) and from 89.8 ± 20.9 to 98.7 ± 17.4 in Group B ($P < .0001$). In Group C, total FIM score was virtually unchanged (from 90.8 ± 14.9 to 90.7 ± 14.9). The score for the subitem self-care increased significantly in both Group A (27.0 ± 4.8 to 30.7 ± 6.1 ; $P = .0004$) and Group B (28.2 ± 9.2 to 31.8 ± 7.8 ; $P < .0001$). The score for the subitem mobility increased from 12.0 ± 3.7 to 14.6 ± 4.0 in Group A ($P = .0006$) and from 12.4 ± 5.9 to 15.4 ± 4.4 ($P = .0003$) in Group B. Moreover, in both treatment groups, each

patient attributed his or her own subjective improvement to the rehabilitative treatment.

Conclusion Both inpatient and outpatient neurorehabilitation had a positive impact on disability in MS patients. Benefits were observed in activities of daily living such as self-care and mobility. Despite the greater amount of rehabilitative therapy in the inpatient setting, no statistically significant differences were found between outpatients and inpatients in terms of functional independence.