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1. Title: A review and update on the guidelines for the acute non-operative management of cervical spinal cord injury.
   Citation: Journal of neurosurgical sciences, Jun 2015, vol. 59, no. 2, p. 119-128, 0390-5616 (June 2015)
   Author(s): Readdy, W J, Chan, A K, Matijakovich, D J, Dhall, S D
   Abstract: Acute traumatic spinal cord injury (SCI) is an important cause of impairment globally with estimates of incidence varying from 10.4 to 83 million inhabitants annually. These injuries typically impact younger individuals, reduce quality of life years, and are costly to patients, with lifetime costs estimated to exceed $4 million. Given the lifetime impact of SCI, establishing clear practice guidelines for the acute non-operative management of these injuries remains important. In 2013 the Joint Section on Disorders of the Spine and Peripheral Nerves of the American Association of Neurological Surgeons (AANS) and the Congress of Neurological Surgeons (CNS) released revised guidelines on the topic of Cervical Spinal Cord Injury (SCI). In the present article, we explore the seven general management subsections of the cervical SCI guidelines, review the key literature supporting each recommendation, and review the additional literature since the publication of the 2013 guidelines. Our review found a paucity of significant updates within several of the SCI guideline sections. As a result of our findings we propose a collaborative, multi-institutional prospective study to evaluate many pressing limitations of the current literature. In particular, the development of common data elements that allow consistent, reproducible data collection should be made a priority.
   Source: Medline

2. Title: Bladder recovery by stem cell based cell therapy in the bladder dysfunction induced by spinal cord injury: Systematic review and meta-analysis
   Citation: PLoS ONE, March 2015, vol./is. 10/3, 1932-6203 (17 Mar 2015)
   Author(s): Kim J.H., Shim S.R., Doo S.W., Yang W.J., Yoo B.W., Kim J.M., Ko Y.M., Song E.S., Lim I.S., Lee H.J., Song Y.S.
   Language: English
   Abstract: Background: Bladder dysfunction induced by spinal cord injury (SCI) can become problematic and severely impair the quality of life. Preclinical studies of spinal cord injury have largely focused on the recovery of limb function while neglecting to investigate bladder recovery. Objective: The present study was performed to investigate and review the effect of stem cell-based therapy on bladder recovery in SCI. Methods: We conducted a meta-analysis of urodynamic findings of experimental trials that included studies of stem cell-based cell therapy in SCI. Relevant studies were searched using MEDLINE, EMBASE and Cochrane Library (January 1990 - December 2012). Final inclusion was determined by a urodynamic study involving detailed numerical values. Urodynamic parameters for analysis included voiding pressure, residual urine, bladder capacity and non-voiding contraction (NVC). Meta-analysis of the data, including findings from urodynamic studies, was performed using the Mantel-Haenszel method. Results: A total of eight studies were included with a sample size of 224 subjects. The studies were divided into different subgroups by different models of SCI. After a stem cell-based cell therapy, voiding pressure (−6.35, p < 0.00001, I<sup>2</sup> = 77%), NVC (−3.58, p < 0.00001, I<sup>2</sup> = 82%), residual urine (−0.24, p = 0.004, I<sup>2</sup> = 95%) showed overall significant improvement. Bladder capacity showed improvement after treatment only in the transection type (−0.23, p = 0.0002, I<sup>2</sup> = 0%). Conclusion: After stem cell-based cell therapy in SCI, partial bladder recovery including improvement of voiding pressure, NVC, and residual urine was demonstrated. Additional studies are needed to confirm the detailed mechanism and to obtain an ideal treatment strategy for bladder recovery.
   Publication type: Journal: Review
   Source: EMBASE
   Full text: Available ProQuest at PLoS ONE
   Full text: Available ProQuest at PLoS One

3. Title: Botulinum toxin A injection for the treatment of neurogenic detrusor overactivity secondary to spinal cord injury: Multi-institutional experience in Japan
Abstract: Objectives: To examine the efficacy and safety of onabotulinumtoxinA (Botox) injection into the bladder wall for the treatment of neurogenic detrusor overactivity secondary to spinal cord injury in Japanese patients. Methods: We enrolled Japanese spinal cord injury patients with cystometrically confirmed neurogenic detrusor overactivity who experienced urinary incontinence at least once a week either because they were refractory to anticholinergics or had to discontinue treatment because of adverse events. Patients received 200 units of onabotulinumtoxinA injected into the bladder wall after a 2-week washout of anticholinergics, and urodynamic variables were assessed before and 1 month after injection. Catheterization and urinary incontinence data, as well as International Consultation on Incontinence Questionnaire - Short Form scores, were assessed before injection and every month thereafter until the cessation of treatment effects. Results: The study enrolled 19 patients (13 men, six women, age range 22-67 years). One month after injection, the mean number of urinary incontinence episodes decreased from 4.3 to 1.5 times/day (P = 0.004), and the maximum cystometric capacity increased from 100 mL to 296 mL (P = 0.0004). The rate of effective cases whose daily urinary incontinence frequency was decreased to less than 50% was 74%. The duration of efficacy without anticholinergic medication ranged from 3 to 12 months (median 8.5 months). Clinically significant adverse events were not observed. Conclusions: The present findings show the efficacy and tolerability of onabotulinumtoxinA injection for the treatment of neurogenic detrusor overactivity in Japanese spinal cord injury patients.

Publication type: Journal: Article

Source: EMBASE

4. Title: Chemodenervation for treatment of limb spasticity following spinal cord injury: a systematic review.

Citation: Spinal Cord, 01 April 2015, vol./is. 53/4(252-264), 13624393

Author(s): Lui, J, Sarai, M, Mills, P B

Language: English

Abstract: Study design: Systematic review. Objectives: To systematically review the literature on chemodenervation with botulinum toxin (BoNT) or phenol/alcohol for treatment of limb spasticity following spinal cord injury (SCI). Setting: British Columbia, Canada. Methods: EMBASE, MEDLINE, CINAHL, Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials were searched for English language studies published up until March 2014. Studies were assessed for eligibility and quality by two independent reviewers. Results: No controlled trials were identified. A total of 19 studies were included: 9 involving BoNT and 10 involving phenol/alcohol. Owing to the clinically diverse nature of the studies, meta-analysis was deemed inappropriate. The studies produced level 4 and level 5 evidence that chemodenervation with BoNT or alcohol/phenol can lead to improvement in outcome measurements classified in the body structure and function, as well as activity domains of the International Classification of Functioning, Disability and Health framework. The Modified Ashworth Scale (MAS) was the most commonly used outcome measure. All six studies on BoNT and three of the four studies on phenol/alcohol measuring MAS reported a decrease in at least one point. An improvement in MAS was not always associated with improvement in function. The effect of phenol/alcohol has the potential to last beyond 6 months; study follow-up did not occur beyond this time point. Conclusion: Chemodenervation with BoNT or phenol/alcohol may improve spasticity and function in individuals with SCI. However, there is a lack of high-quality evidence and further research is needed to confirm the efficacy of these interventions.

Publication type: Journal article

Source: CINAHL

Full text: Available Nature Publishing Group at Spinal Cord

5. Title: Circadian rhythms of hemostatic factors in tetraplegia: a double-blind, randomized, placebo-controlled cross-over study of melatonin.

Citation: Spinal Cord, 01 April 2015, vol./is. 53/4(285-290), 13624393

Author(s): Kostovski, E, Dahm, A E A, Mowinckel, M C, Stranda, A, Skretting, G, Østerud, B, Sandset, P M, Iversen, P O

Language: English

Abstract: Study design: This is a double-blind, randomized, placebo-controlled cross-over study of melatonin in complete tetraplegic patients. Objectives: Tetraplegic patients have an increased risk of venous thrombosis despite prophylaxis, blunted variations in melatonin and altered circadian variation of several hemostatic markers. To examine whether melatonin could modify the regulation of hemostasis, we measured plasma melatonin and several markers of hemostasis in tetraplegic subjects with or without melatonin supplement. Setting: The study was conducted in the Section for Spinal Cord Injury, Sunnaas Hospital, Nesoddtangen, Norway. Methods: Six subjects with long-standing complete tetraplegia were included in this cross-over study with 2 mg of melatonin or placebo given 4 days before sampling. We also included six able-bodied men without any intervention. Plasma samples were then collected frequently during a 24-h awake/sleep cycle. The plasma concentrations of melatonin and the various markers were analyzed using linear mixed models. Results: The 24-h profiles of prothrombin fragment 1+2 and von Willebrand factor, but not D-dimer, activated FVII, tissue factor pathway inhibitor and plasminogen activator inhibitor type 1, differed (P < 0.05) between tetraplegic patients.
and able-bodied subjects. The absolute plasma concentration of activated FVII was higher (P<0.05) among the able-bodied compared with the tetraplegic groups. Supplementation of melatonin had no impact on these findings. Conclusions: We found differences in circadian variation of several hemostatic markers between able-bodied and tetraplegics. These differences were apparently unrelated to fluctuations in the melatonin concentrations, suggesting little or no role of melatonin in the regulation of hemostasis in tetraplegia. Sponsorship: Financial support was provided from the Throne Holst Foundation.

**Publication type:** journal article  
**Source:** CINAHL  
**Full text:** Available Nature Publishing Group at Spinal Cord

6. **Title:** Common data elements for spinal cord injury clinical research: a National Institute for Neurological Disorders and Stroke project.  
**Citation:** Spinal Cord, 01 April 2015, vol./is. 53(4)(265-277), 13624393  
**Language:** English  
**Abstract:** Objectives: To develop a comprehensive set of common data elements (CDEs), data definitions, case report forms and guidelines for use in spinal cord injury (SCI) clinical research, as part of the CDE project at the National Institute of Neurological Disorders and Stroke (NINDS) of the US National Institutes of Health. Setting: International Working Groups. Methods: Nine working groups composed of international experts reviewed existing CDEs and instruments, created new elements when needed and provided recommendations for SCI clinical research. The project was carried out in collaboration with and cross-referenced to development of the International Spinal Cord Society (ISCoS) International SCI Data Sets. The recommendations were compiled, subjected to internal review and posted online for external public comment. The final version was reviewed by all working groups and the NINDS CDE team before release. Results: The NINDS SCI CDEs and supporting documents are publicly available on the NINDS CDE website and the ISCoS website. The CDEs span the continuum of SCI care and the full range of domains of the International Classification of Functioning, Disability and Health. Conclusion: Widespread use of CDEs can facilitate SCI clinical research and trial design, data sharing and retrospective analyses. Continued international collaboration will enable consistent data collection and reporting, and will help ensure that the data elements are updated, reviewed and broadcast as additional evidence is obtained.  
**Publication type:** journal article  
**Source:** CINAHL  
**Full text:** Available Nature Publishing Group at Spinal Cord

7. **Title:** Concise review: Reactive astrocytes and stem cells in spinal cord injury: Good guys or bad guys?  
**Citation:** Stem Cells, April 2015, vol./is. 33(4)(1036-1041), 1066-5099;1549-4918 (01 Apr 2015)  
**Author(s):** Lukovic D., Stojkovic M., Moreno-Manzano V., Jendelova P., Sykova E., Bhattacharya S.S., Erceg S.  
**Language:** English  
**Abstract:** Spinal cord injury (SCI) usually results in long lasting locomotor and sensory neuron degeneration below the injury. Astrocytes normally play a decisive role in mechanical and metabolic support of neurons, but in the spinal cord they cause injury, exerting well-known detrimental effects that contribute to glial scar formation and inhibition of axon outgrowth. Cell transplantation is considered a promising approach for replacing damaged cells and promoting neuroprotective and neuroregenerative repair, but the effects of the grafted cells on local tissue and the regenerative properties of endogenous neural stem cells in the injured spinal cord are largely unknown. During the last 2 decades cumulative evidence from diverse animal models has indicated that reactive astrocytes in synergy with transplanted cells could be beneficial for injury in multiple ways, including neuroprotection and axonal growth. In this review, we specifically focus on the dual opposing roles of reactive astrocytes in SCI and how they contribute to the creation of a permissive environment when combined with transplanted cells as the influential components for a local regenerative niche. Modulation of reactive astrocyte function might represent an extremely attractive new therapy to enhance the functional outcomes in patients.  
**Publication type:** Journal: Review  
**Source:** EMBASE

8. **Title:** Cortical activation during visual illusory walking in persons with spinal cord injury: A pilot study  
**Citation:** Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96(4)(750-753), 0003-9993;1532-821X (01 Apr 2015)  
**Author(s):** Eick J., Richardson E.J.  
**Language:** English  
**Abstract:** Objective To determine the location of cortical activation during a visual illusion walking paradigm, a recently proposed treatment for spinal cord injury (SCI)-related neuropathic pain, in persons with SCI compared with able-bodied controls. Design Pilot experimental functional magnetic resonance imaging (fMRI) trial. Setting Outpatient rehabilitation
9. Title: Does patterned afferent stimulation of sacral dermatomes suppress urethral sphincter reflexes in individuals with spinal cord injury?

Citation: Neurourology and Urodynamics, March 2015, vol./is. 34/3(219-223), 0733-2467;1520-6777 (01 Mar 2015)

Author(s): McCoin J.L., Bhadra N., Brose S.W., Gustafson K.J.

Language: English

Abstract: Aims Dyssynergic contractions of the external urethral sphincter prevent efficient bladder voiding and lead to numerous health concerns. Patterned electrical stimulation of the sacral dermatomes reduces urethral sphincter spasms and allows functional bladder emptying in cats after chronic SCI. Reflex suppression in animals is strongly dependent on stimulus location and pattern. The purpose of this study was to determine whether the stimulation patterns and locations effective in animals suppress urethral sphincter spasms in humans with SCI. Methods Ten subjects with chronic SCI underwent bladder filling to elicit distention-evoked contractions. During reflex contractions patterned electrical stimulation was applied to the S2 or S3 dermatome in random 25-sec intervals. Bladder and sphincter pressures were simultaneously recorded and compared between control and afferent stimulation periods. Results Six of the 10 subjects demonstrated both reflex bladder and sphincter contractions with bladder filling. No significant reduction in urethral pressure was observed during stimulation for any stimulus locations and patterns tested. Conclusions Stimulation parameters and locations effective in SCI animals did not suppress reflex sphincter activity in these human subjects. It is likely that a broader set of stimulus patterns and dermatome locations will need to be tested to find the effective combination in humans.

Publication type: Journal: Article

Source: EMBASE

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10. Title: Effects of repetitive transcranial magnetic stimulation on recovery of function after spinal cord injury

Citation: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(S145-S155), 0003-9993;1532-821X (01 Apr 2015)

Author(s): Tazoe T., Perez M.A.

Language: English

Abstract: A major goal of rehabilitation strategies after spinal cord injury (SCI) is to enhance the recovery of function. One possible avenue to achieve this goal is to strengthen the efficacy of the residual neuronal pathways. Noninvasive repetitive transcranial magnetic stimulation (rTMS) has been used in patients with motor disorders as a tool to modulate activity of corticospinal, cortical, and subcortical pathways to promote functional recovery. This article reviews a series of studies published during the last decade that used rTMS in the acute and chronic stages of paraplegia and tetraplegia in humans with complete and incomplete SCI. In the studies, rTMS has been applied over the arm and leg representations of the primary motor cortex to target 3 main consequences of SCI: sensory and motor function impairments, spasticity, and neuropathic pain. Although some studies demonstrated that consecutive sessions of rTMS improve aspects of particular functions, other studies did not show similar effects. We discuss how rTMS parameters and postinjury reorganization in the corticospinal tract, motor cortical, and spinal cord circuits might be critical factors in understanding the advantages and disadvantages of using rTMS in patients with SCI. The available data highlight the limited information on the use of rTMS after SCI and the need to further understand the pathophysiology of neuronal structures affected by rTMS to maximize the potential beneficial effects of this technique in humans with SCI.

Publication type: Journal: Review

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11. Title: Effects of robotic-locomotor training on stretch reflex function and muscular properties in individuals with spinal cord injury
Citation: Clinical Neurophysiology, May 2015, vol./is. 126/5(997-1006), 1388-2457;1872-8952 (01 May 2015)
Author(s): Mirbagheri M.M., Kindig M.W., Niu X.
Language: English
Abstract: Objective: We sought to determine the therapeutic effect of robotic-assisted step training (RAST) on neuromuscular abnormalities associated with spasticity by characterization of their recovery patterns in people with spinal cord injury (SCI). Methods: Twenty-three motor-incomplete SCI subjects received one-hour RAST sessions three times per week for 4. weeks, while an SCI control group received no training. Neuromuscular properties were assessed using ankle perturbations prior to and during the training, and a system-identification technique quantified stretch reflex and intrinsic stiffness magnitude and modulation with joint position. Growth-mixture modeling classified subjects based on similar intrinsic and reflex recovery patterns. Results: All recovery classes in the RAST group presented significant (p < 0.05) reductions in intrinsic and reflex stiffness magnitude and modulation with position; the control group presented no changes over time. Subjects with larger baseline abnormalities exhibited larger reductions, and over longer training periods. Conclusions: Our findings demonstrate that RAST can effectively reduce neuromuscular abnormalities, with greater improvements for subjects with higher baseline abnormalities. Significance: Our findings suggest, in addition to its primary goal of improving locomotor patterns, RAST can also reduce neuromuscular abnormalities associated with spasticity. These findings also demonstrate that these techniques can be used to characterize neuromuscular recovery patterns in response to various types of interventions.
Publication type: Journal: Article
Source: EMBASE

12. Title: Efficacy of venlafaxine XR for the treatment of pain in patients with spinal cord injury and major depression: A randomized, controlled trial
Citation: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(680-689), 0003-9993;1532-821X (01 Apr 2015)
Language: English
Abstract: Objectives To (1) determine the efficacy of venlafaxine XR for the treatment of pain (secondary aim) in individuals with spinal cord injury (SCI) enrolled in a randomized controlled trial (RCT) on the efficacy of venlafaxine XR for major depressive disorder (MDD) (primary aim); and (2) test the hypothesis that venlafaxine XR would be effective for both neuropathic and nociceptive pain. Design Multisite, double-blind, randomized (1:1) controlled trial with subjects block randomized and stratified by site, lifetime history of substance abuse, and prior history of MDD. Setting Six Departments of Physical Medicine and Rehabilitation in university-based medical schools. Participants Individuals (N=123) with SCI and major depression between 18 and 64 years of age, at least 1 month post-SCI who also reported pain. Intervention Twelve-week trial of venlafaxine XR versus placebo using a flexible titration schedule. Outcome Measures A 0-to-10 numeric rating scale for pain, pain interference items of the Brief Pain Inventory; 30% and 50% responders. Results The effect of venlafaxine XR on neuropathic pain was similar to that of placebo. However venlafaxine XR resulted in statistically significant and clinically meaningful reductions in nociceptive pain site intensity and interference even after controlling for anxiety, depression, and multiple pain sites within the same individual. For those who achieved a minimally effective dose of venlafaxine XR, some additional evidence of effectiveness was noted for those with mixed (both neuropathic and nociceptive) pain sites. Conclusions Venlafaxine XR could complement current medications and procedures for treating pain after SCI and MDD that has nociceptive features. Its usefulness for treating central neuropathic pain is likely to be limited. Research is needed to replicate these findings and determine whether the antinociceptive effect of venlafaxine XR generalizes to persons with SCI pain without MDD.
Publication type: Journal: Article
Source: EMBASE

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13. Title: Electrical stimulation of abdominal muscles to produce cough in spinal cord injury: Effect of stimulus intensity
Citation: Neurorehabilitation and Neural Repair, May 2015, vol./is. 29/4(362-369), 1545-9683;1552-6844 (27 May 2015)
Language: English
Abstract: Background. Surface electrical stimulation of the abdominal muscles, with electrodes placed in the posterolateral position, combined with a voluntary cough can assist clearance of airway secretions in individuals with high-level spinal cord injury (SCI). Objective. To determine whether an increase in stimulus intensity of the trains of electrical
stimuli delivered to the expiratory muscles has an increasing effect on a stimulated voluntary cough and to determine at which stimulus intensity a plateau of cough peak expiratory flow occurs. Methods. In 7 healthy individuals with a SCI at and above C7, gastric pressure (Pga), esophageal pressure (Pes), peak expiratory cough flow (PEF_cough), and expiratory volume were measured as participants coughed voluntarily with simultaneous trains of electrical stimuli delivered over the abdominal muscles (50 Hz, 1-s duration). The intensity of the stimulation was increased incrementally. Results: A plateau in PEF_cough occurred in all 7 individuals at a mean of 211 +/- 29 mA (range 120-360 mA). Peak values reached for Pga, Pes, and PEF_cough were 83.0 +/- 8.0 cmH2O, 66.1 +/- 5.6 cmH2O, and 4.0 +/- 0.4 l/s respectively. Conclusions. The plateau in expiratory cough flow that was associated with increasing expiratory pressures is indicative of dynamic airway compression. This suggests that the evoked cough will be effective in creating more turbulent airflow to further assist in dislodging mucus and secretions.

**Publication type**: Journal: Article

**Source**: EMBASE

14. **Title**: Elevated circulating levels of the pro-inflammatory cytokine macrophage migration inhibitory factor in individuals with acute spinal cord injury

**Citation**: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(633-644), 0003-9993;1532-821X (01 Apr 2015)

**Author(s)**: Bank M., Stein A., Sison C., Glazer A., Jassal N., McCarthy D., Shatzer M., Hahn B., Chugh R., Davies P., Bloom O.

**Language**: English

**Abstract**: Objective To test the hypothesis that macrophage migration inhibitory factor (MIF) is elevated in the circulation of individuals with acute spinal cord injury (SCI) compared with uninjured individuals. Design Prospective, observational pilot study. Setting Academic medical center. Participants Adults with acute traumatic SCI (n=18) and uninjured participants (n=18), comparable in age and sex distribution. Interventions Not applicable. Main Outcome Measures The primary outcome measure was the plasma MIF levels. Potential correlations were examined between MIF and clinical/demographic variables. The secondary outcome was to determine if other immune mediators were elevated in participants with acute SCI and if their levels correlated with the MIF. Results MIF was significantly elevated in subjects with acute SCI compared with control subjects at 0 to 3 (P<.0029), 4 to 7 (P<.0001), and 8 to 11 (P<.0015) days postinjury (DPI). At 0 to 3 DPI, levels of cytokines interleukin-6 (P<.00017), interleukin-9 (P<.0047), interleukin-16 (P<.007), interleukin-18 (P<.014), chemokines growth-related oncogene alpha/chemokine (C-X-C motif) ligand 1 (P<.0127) and macrophage inflammatory protein 1-beta/chemokine (C-C motif) ligand 4 (P<.0015), and growth factors hepatocyte growth factor (HGF) (P<.0001) and stem cell growth factor-beta (P<.0103) were also significantly elevated in subjects with acute SCI. With the exception of interleukin-9, all of these factors remained significantly elevated at 4 to 7 DPI; a subset (interleukin-16, HGF, stem cell growth factor-beta) remained elevated throughout the study. Within individuals, MIF levels correlated with HGF (P<.018) and interleukin-16 (P<.01). Conclusions These data demonstrate that MIF is significantly elevated in subjects with acute SCI, supporting further investigation of MIF and other inflammatory mediators in acute SCI, where they may contribute to primary and secondary functional outcomes.

**Publication type**: Journal: Article

**Source**: EMBASE

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15. **Title**: Environmental factors item development for persons with stroke, traumatic brain injury, and spinal cord injury

**Citation**: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(589-595), 0003-9993;1532-821X (01 Apr 2015)

**Author(s)**: Heinemann A.W., Magasi S., Hammel J., Carlozzi N.E., Garcia S.F., Hahn E.A., Lai J.-S., Tulsky D., Gray D.B., Hollingsworth H., Jerousek S.

**Language**: English

**Abstract**: Objectives To describe methods used in operationalizing environmental factors; to describe the results of a research project to develop measures of environmental factors that affect participation; and to define an initial item set of facilitators and barriers to participation after stroke, traumatic brain injury, and spinal cord injury. Design Instrument development included an extensive literature review, item classification and selection, item writing, and cognitive testing following the approach of the Patient-Reported Outcomes Measurement Information System. Setting Community. Participants Content area and outcome measurement experts (n=10) contributed to instrument development; individuals (n=200) with the target conditions participated in focus groups and in cognitive testing (n=15). Interventions None. Main Outcome Measures Environmental factor items were categorized in 6 domains: assistive technology; built and natural environment; social environment; services, systems, and policies; access to information and technology; and economic quality of life. Results We binned 2273 items across the 6 domains, winnowed this pool to 291 items for cognitive testing, and recommended 274 items for pilot data collection. Conclusions Five of the 6 domains correspond closely to the

**Publication type**: Journal: Article

**Source**: EMBASE

**Full text**: Available ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION at [Archives of Physical Medicine and Rehabilitation](https://www.ncbi.nlm.nih.gov/pubmed/)

**Full text**: Available ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION at [Salisbury District Hospital Healthcare Library](https://www.ncbi.nlm.nih.gov/pubmed/)
International Classification of Functioning, Disability and Health taxonomy of environmental factors; the sixth domain, economic quality of life, reflects an important construct that reflects financial resources that affect participation. Testing with a new and larger sample is underway to evaluate reliability, validity, and sensitivity.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION at Archives of Physical Medicine and Rehabilitation  
**Full text:** Available ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION at Salisbury District Hospital Healthcare Library

**Citation:** Disability & Rehabilitation, 20 April 2015, vol./is. 37/9(739-749), 09638288  
**Author(s):** Wilbanks, Susan R., Ivankova, Nataliya V.  
**Language:** English  
**Abstract:** Background: Return-to-work (RTW) rates after spinal cord injury (SCI) in the USA are very low and are continuing to decline. Previous research has attempted to identify factors facilitating RTW; however, the phenomenon of RTW involves many personal factors and predicting RTW success remains difficult. Purpose: The purpose of this pilot study was to explore the factors facilitating adults with SCI rejoining the workforce in an urban area in order to identify items that may be emphasized in the rehabilitation process. Methods: The study was completed using qualitative methods. Four adults who had acquired a traumatic SCI in adulthood and were currently employed participated. Their experiences in RTW after injury were collected via semi-structured interviews and photography of assistive devices. Results: The most common facilitating factor was motivation, with family and rehabilitation professionals serving as extrinsic motivators. Other facilitators were resources and perceived benefits. Conclusions: Motivation and resources were important facilitators, including rehabilitation professional’s personal influence and therapies, and resource assistance from state agencies. The results indicate that practitioners can play an important role in influencing RTW, and resources from state agencies are helpful when individuals know how to access and utilize them.  
**Publication type:** Journal: Article  
**Source:** CINAHL

17.Title: Facilitatory effects of anti-spastic medication on robotic locomotor training in people with chronic incomplete spinal cord injury  
**Citation:** Journal of NeuroEngineering and Rehabilitation, 2015, vol./is. 12/1, 1743-0003 (2015)  
**Author(s):** Duffell L.D., Brown G.L., Mirbagheri M.M.  
**Language:** English  
**Abstract:** Background: The objective of this study was to investigate whether an anti-spasticity medication can facilitate the effects of robotic locomotor treadmill training (LTT) to improve gait function in people with incomplete spinal cord injury (SCI). Methods: Individuals with chronic incomplete SCI were recruited and carried out a 4 week intervention of either locomotor treadmill training (LTT) alone (n=26) or LTT combined with Tizanidine (TizLTT), an anti-spasticity medication (n=22). Gait function was evaluated using clinical outcome measures of gait, speed and endurance. To better understand the underlying mechanisms of the therapeutic effects, maximal strength, active range of motion (AROM) and peak velocity (Vp) of ankle dorsiflexion and planter-flexor muscles were also measured. Differences were assessed using two-way mixed design analysis of variance. The number of subjects that achieved the minimal important difference (MID) for clinical scores was also measured for each group, and the results of those that did attain the MID were compared with those that did not. Results: Both LTT and TizLTT resulted in significant improvements in walking speed and dorsiflexion maximum strength, with no significant differences between them, using group-averaging analysis. However, using the MID analysis, a higher proportion of subjects in the TizLTT group achieved the MID for walking speed (40%) compared with LTT alone (13%). Those that achieved the MID for walking speed were significantly higher functioning at baseline than those that did not in the TizLTT group, and the change in walking speed was associated with the change in dorsiflexion peak velocity (R<sup>2</sup>=0.40; P<0.05). Conclusion: Tizanidine appears to facilitate the effects of LTT on gait function in individuals with chronic SCI that are higher functioning at baseline. We speculate that this may be due to restoration of inhibitory mechanisms by Tizanidine, resulting in greater stretch in the planterflexor muscles during the LTT.  
**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available National Library of Medicine at Journal of NeuroEngineering and Rehabilitation  
**Full text:** Available National Library of Medicine at Journal of NeuroEngineering and Rehabilitation

18.Title: Gene therapy approaches to promoting axonal regeneration after spinal cord injury  
**Citation:** Neuromethods, 2015, vol./is. 98/(153-174), 0893-2336;1940-6045 (2015)  
**Author(s):** Bo X., Zhang Y.
Conclusions
There was no evidence of improvement.

Long-term survival has not changed over the past 30 years.

Abstract:
Traumatic spinal cord injury is a devastating medical condition that still lacks any effective treatment. Studies on the pathological processes of spinal cord injury and neural repair indicate that the two main obstacles that prevent successful axonal regeneration and functional recovery are the weak intrinsic regenerative capacity of the neurons and the presence of several types of inhibitory molecules in the central nervous system (CNS). Various strategies have been derived and tested to elevate the regenerative status of injured neurons in the CNS or block the inhibitory molecules. Gene therapy approaches have been viewed as the ideal means to treat spinal cord injured patients as they can achieve long-term and localized delivery of therapeutic molecules in the CNS. Ex vivo gene delivery offers the additional advantage of providing cellular support for regenerating axons. In this chapter, we summarize the latest studies on viral vector-mediated gene deliveries in animal models of spinal cord injury. Most of the studies reported so far are aimed at delivery of molecules that prevent cell death, or increase intrinsic regenerating state of injured neurons, or modify the CNS environment to make it permissive for axon growth. We also provide detailed protocols used in our lab on gene therapy approaches in promoting axonal regeneration and functional recovery in three animal models.

Publication type: Book Series: Article
Source: EMBASE

19. Title: Hyponatremia in spinal cord injury patients: new insight into differentiating between the dilution and depletion forms.
Citation: Spinal Cord, 01 April 2015, vol./is. 53/4(291-296), 13624393
Author(s): Kriz, J, Schuck, O, Horackova, M
Language: English

Abstract:
Study design: This is a retrospective study. Objectives: The objectives of this study were to present a new model for differentiating between the dilution and depletion forms of hyponatremia in patients in the postacute phase after spinal cord injury (SCI), and to identify possible etiological factors contributing to hyponatremia in these patients. Setting: University Hospital Motol, Prague, Czech Republic. Methods: Eighty-seven of 352 patients hospitalized in 2008-2012 in the Spinal Cord Unit were hyponatremic. Seventy-four patients had \( S_{Na^+} \geq 130 \text{ mmol} \cdot \text{l}^{-1} \) and 13 patients had \( S_{Na^+} < 130 \text{ mmol} \cdot \text{l}^{-1} \). We propose a simple model of an electrolyte solution in which the Na\(^+\) concentration is higher than the Cl\(^-\) concentration, making it possible to compare the effects of dilution and depletion of Na\(^+\) and Cl\(^-\). The dilution of Na\(^+\) and Cl\(^-\) leads to a significant increase in the Na\(^+\)/Cl\(^-\) ratio, with the Na\(^+\)/Cl\(^-\) ratio remaining unchanged.

Dilution with water results in a decrease of Na\(^+\)/Cl\(^-\) ratio. The Na\(^+\)/Cl\(^-\) ratio was consistent with the depletion model in 46% and with the dilution model in 32%. In patients with Na\(^+\)/Cl\(^-\) ranging between 130 and 155 mmol \cdot \text{l}^{-1} \), the respective rates were 34 and 12%. Conclusion: Examination of \( S_{Na^+} \geq 130 \text{ mmol} \cdot \text{l}^{-1} \) in patients with SCI could be helpful in considering whether hyponatremia is consistent either with the NaCl dilution model or with the NaCl depletion model.

Further studies are needed for more accurate interpretation of the results, particularly with respect to volume and acid-base disorders.

Publication type: journal article
Source: CINAHL

Full text: Available Nature Publishing Group at Spinal Cord

20. Title: Improvements in long-term survival after spinal cord injury?
Citation: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(645-651), 0003-9993;1532-821X (01 Apr 2015)
Author(s): Shavelle R.M., Devivo M.J., Brooks J.C., Strauss D.J., Paculdo D.R.
Language: English

Abstract:
Objective To investigate whether there have been improvements in long-term survival after spinal cord injury in recent decades. Design Survival analysis using time-varying covariates. The outcome variable was survival or mortality, and the explanatory variables were age, sex, level and grade of injury, and calendar year. The data were analyzed using the logistic regression model, Poisson regression model with comparison to the general population, and the computation of standardized mortality ratios for various groups. Setting National Spinal Cord Injury Model Systems facilities. Participants Persons (N=31,531) who survived 2 years postinjury, were older than 10 years, and who did not require ventilator support. These persons contributed 484,979 person-years of data, with 8536 deaths over the 1973 to 2012 study period. Interventions Not applicable. Main Outcome Measures Survival; survival relative to the general population; life expectancy. Results After adjustment for age, sex, race, etiology of injury, time since injury, and level and grade of injury, mortality in persons with spinal cord injury was higher in the 2005 to 2012 period than in 1990 to 2004 or 1980 to 1989, the odds ratios for these 3 periods were .857, .826, and .802 as compared with the 1970 to 1979 reference period. Conclusions There was no evidence of improvement. Long-term survival has not changed over the past 30 years.
21. Title: Inhibin B is lower and anti-Mullerian hormone is similar in serum of men with spinal cord injuries compared to controls

Citation: Systems Biology in Reproductive Medicine, April 2015, vol./is. 61/2(72-77), 1939-6368;1939-6376 (01 Apr 2015)

Author(s): Ibrahim E., Aballa T.C., Roudebush W.E., Lynne C.M., Brackett N.L.

Language: English

Abstract: Men with spinal cord injury have a unique semen profile characterized by normal sperm concentration but abnormally low sperm motility and viability. The purpose of our study was to determine if new diagnostic information could be obtained for this population by measuring serum concentrations of inhibin B and anti-Mullerian hormone. These hormones, as well as follicle stimulating hormone, luteinizing hormone, and testosterone, were measured in 30 men with spinal cord injury and 15 age-matched control subjects. Serum concentrations of inhibin B and testosterone were significantly lower in the spinal cord injury group compared to the control group. A statistically significant negative relationship was observed between serum concentrations of inhibin B and follicle stimulating hormone in both the spinal cord injury group and the control group, and between inhibin B and luteinizing hormone in the spinal cord injury group only. A significant positive relationship was also observed between inhibin B and sperm concentration in the spinal cord injury group. Although serum concentrations of inhibin B were significantly lower in the spinal cord injury group than in controls, inhibin B and anti-Mullerian hormone serum concentrations did not provide an additional diagnostic tool for male infertility in this population. This is the first study to determine serum concentrations of inhibin B and anti-Mullerian hormone in men with spinal cord injury.

Publication type: Journal: Article
Source: EMBASE

22. Title: Intensity dependent effects of transcranial direct current stimulation on corticospinal excitability in chronic spinal cord injury

Citation: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(S114-S121), 0003-9993;1532-821X (01 Apr 2015)


Language: English

Abstract: Objective To investigate the effects of anodal transcranial direct current stimulation (a-tDCS) intensity on corticospinal excitability and affected muscle activation in individuals with chronic spinal cord injury (SCI). Design Single-blind, randomized, sham-controlled, crossover study. Setting Medical research institute and rehabilitation hospital. Participants Volunteers (N=9) with chronic SCI and motor dysfunction in wrist extensor muscles. Interventions Three single session exposures to 20 minutes of a-tDCS (anode over the extensor carpi radialis [ECR] muscle representation on the left primary motor cortex, cathode over the right supraorbital area) using 1mA, 2mA, or sham stimulation, delivered at rest, with at least 1 week between sessions. Main Outcome Measures Corticospinal excitability was assessed with motor-evoked potentials (MEPs) from the ECR muscle using surface electromyography after transcranial magnetic stimulation. Changes in spinal excitability, sensory threshold, and muscle strength were also investigated. Results Mean MEP amplitude significantly increased by approximately 40% immediately after 2mA a-tDCS (pre: 0.36+/-.1mV; post: 0.47+/-.11mV; P=.001), but not with 1mA or sham. Maximal voluntary contraction measures remained unaltered across all conditions. Sensory threshold significantly decreased over time after 1mA (P=.002) and 2mA (P=.039) a-tDCS and did not change with sham. F-wave persistence showed a nonsignificant trend for increase (pre: 32%/+/-12%; post: 41%+/+10%; follow-up: 46%+/+12%) after 2mA stimulation. No adverse effects were reported with any of the experimental conditions. Conclusions The a-tDCS can transiently raise corticospinal excitability to affected muscles in patients with chronic SCI after 2mA stimulation. Sensory perception can improve with both 1 and 2mA stimulation. This study gives support to the safe and effective use of a-tDCS using small electrodes in patients with SCI and highlights the importance of stimulation intensity.

Publication type: Journal: Article
Source: EMBASE

23. Title: International standards for neurological classification of spinal cord injury: classification skills of clinicians
Objective To assess lifetime prevalence of 7 chronic health conditions (CHCs) among a cohort of adults with chronic traumatic spinal cord injury (SCI). Design Cross-sectional. Setting Rehabilitation hospital. Participants Adults with SCI who were >18 years of age, were >1 year postinjury, and had residual neurologic effects impeding full recovery (n=1678). Interventions Not applicable. Main Outcome Measures CHCs were measured using questions from the Behavioral Risk Factor Surveillance System for diabetes (not including gestational), heart attack (also called a myocardial infarction), angina or coronary artery disease, stroke, hypertension (not including during pregnancy), high blood cholesterol, or cancer. Results Of participants, 49.5% reported having at least 1 CHC, with 23.2% reporting >2 CHCs. The most frequently reported CHC was high cholesterol (29.3%) followed by hypertension (28.7%) and diabetes (11.8%). Although the prevalence of CHCs significantly increased with increasing age, only hypertension and cancer were significantly associated with years postinjury. Four CHCs (diabetes, coronary artery disease, hypertension, high cholesterol) were significantly related to mobility status as measured by injury level and ambulatory status. However, after controlling for age, years postinjury, sex, and race, mobility status became nonsignificant in relation to coronary...
artery disease, but it remained significantly associated with diabetes, hypertension, and high cholesterol. Conclusions
Clinicians should be aware of the risk of CHCs in persons with SCI and should screen for these conditions and regular
maintenance activities related to SCI.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available [ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION](https://www.journals.elsevier.com/archives-of-physical-medicine-and-rehabilitation) at Archives of Physical Medicine and Rehabilitation  
**Full text:** Available [ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION](https://www.journals.elsevier.com/archives-of-physical-medicine-and-rehabilitation) at Salisbury District Hospital Healthcare Library

26. **Title:** Mobility, Continence, and Life Expectancy in Persons with ASIA Impairment Scale Grade D Spinal Cord Injuries.  
**Citation:** American Journal of Physical Medicine & Rehabilitation, 01 March 2015, vol./is. 94/3(180-191), 08949115  
**Author(s):** Shavelle, Robert M., Paculdo, David R., Tran, Lihn M., Strauss, David J., Brooks, Jordan C., DeVivo, Michael J.  
**Language:** English  
**Abstract:** Objective: Previous research on the life expectancy of persons with American Spinal Injury Association (ASIA) Impairment Scale Grade D spinal cord injury has considered them as a large homogenous group, making no functional or medical distinctions. This study sought to (1) determine how survival in this group depends on ambulatory function and the extent of bowel or bladder dysfunction, (2) compute life expectancies for various subgroups, and (3) examine whether survival has improved over time. Design: Data were from 8,206 adults with ASIA Impairment Scale Grade D spinal cord injury in the Spinal Cord Injury Model Systems database who were not ventilator dependent and who survived more than 1 yr after injury. There were a total of 1 14,739 person-years of follow-up and 1,730 deaths during the 1970-2011 study period. Empirical age- and sex-specific mortality rates were computed. Regression analysis of survival data with time-dependent covariates was used to determine the effect of risk factors, to test for a time trend, and to estimate mortality rates for subgroups. Life expectancies were obtained from life tables constructed for each subgroup. Results: The ability to walk, whether independently or with an assistive device, was associated with longer survival than wheelchair dependence. The need for an indwelling catheter, and to a lesser extent intermittent catheterization, was associated with increased mortality risk. Persons who walked unaided and who did not require catheterization had life expectancies roughly 90% of normal. Those who required a wheelchair for locomotion had life expectancies comparable with that in paraplegia, less than 75% of normal. No time trend in survival was found. Conclusions: Life expectancy of persons with ASIA Impairment Scale D spinal cord injury depends strongly on the ability to walk and the need for catheterization.  
**Publication type:** journal article  
**Source:** CINAHL  
**Full text:** Available [American journal of physical medicine & rehabilitation / Association of Academic Physiatrists](https://www.ncbi.nlm.nih.gov/pubmed/24407798) at American Journal of Physical Medicine and Rehabilitation

27. **Title:** Neural markers of neuropathic pain associated with maladaptive plasticity in spinal cord injury.  
**Citation:** Pain practice : the official journal of World Institute of Pain, Apr 2015, vol. 15, no. 4, p. 371-377 (April 2015)  
**Author(s):** Pascoal-Faria, Paula, Yalcin, Nilofer, Fregni, Felipe  
**Abstract:** Given the potential use of neural markers for the development of novel treatments in spinal cord pain, we aimed to characterize the most effective neural markers of neuropathic pain following spinal cord injury (SCI). A systematic PubMed review was conducted, compiling studies that were published prior to April, 2014 that examined neural markers associated with neuropathic pain after SCI using electrophysiological and neuroimaging techniques. We identified 6 studies: Four using electroencephalogram (EEG); 1 using magnetic resonance imaging (MRI) and FDG-PET (positron emission tomography); and 1 using MR spectroscopy. The EEG recordings suggested a reduction in alpha EEG peak frequency activity in the frontal regions of SCI patients with neuropathic pain. The MRI scans showed volume loss, primarily in the gray matter of the left dorsolateral prefrontal cortex, and by FDG-PET, hypometabolism in the medial prefrontal cortex was observed in SCI patients with neuropathic pain compared with healthy subjects. In the MR spectroscopy findings, the presence of pain was associated with changes in the prefrontal cortex and anterior cingulate cortex. When analyzed together, the results of these studies seem to point out to a common marker of pain in SCI characterized by decreased cortical activity in frontal areas and possibly increased subcortical activity. These results may contribute to planning further mechanistic studies as to better understand the mechanisms by which neuropathic pain is modulated in patients with SCI as well as clinical studies investigating best responders of treatment. © 2014 World Institute of Pain.  
**Source:** Medline

28. **Title:** Neuromodulation by surface electrical stimulation of peripheral nerves for reduction of detrusor overactivity in patients with spinal cord injury: A pilot study  
**Citation:** Journal of Spinal Cord Medicine, March 2015, vol./is. 38/2(207-213), 1079-0268;2045-7723 (01 Mar 2015)  
**Author(s):** Ojha R., George J., Chandy B.R., Tharion G., Devasahayam S.R.  
**Language:** English
Abstract: Objectives: To demonstrate reduction in detrusor overactivity using surface electrical stimulation of posterior tibial nerve (PTN) or dorsal penile nerve (DPN) in patients with spinal cord injury (SCI). Design: Patients with SCI with symptoms of urinary urgency/leaks, with cystometrogram (CMG) proven detrusor overactivity were recruited in this study. Ten persons with observable F-wave from tibial nerve were included in the PTN group. Five persons who had F-wave absent but preserved bulbocavernosus reflex were included in the DPN group. Stimulation was given at 20 Hz, 10-40 mA for 20 minutes/session/day for 14 consecutive days. Detrusor overactivity was recorded using CMG on days 1 and 15. Settings: Rehabilitation Institute, Department of Physical Medicine and Rehabilitation, Christian Medical College and Hospital, Vellore, TN, India. Participants: Patients with SCI. Interventions: Surface stimulation of peripheral nerves for reduction of detrusor overactivity. Outcome measures: Qualitative analysis using voiding diary data and quantitative analysis using CMG data comparing pre- and post-intervention. Results: P value obtained from voiding chart was 0.021 for PTN and 0.062 for DPN. P value obtained from CMG data was not significant in both groups. In one subject, treatment was extended to 4 weeks and further improvement in voiding diary was seen. Conclusions: In this pilot study of 15 patients, voiding chart data showed statistically significant improvement following PTN stimulation and trend of improvement following DPN stimulation. However, the CMG data were not statistically significant in this sample population. Further studies with larger, appropriately powered sample size would be helpful to demonstrate the associations of symptoms with CMG data.

Publication type: Journal: Article
Source: EMBASE
Full text: Available Salisbury EJournals at Journal of Spinal Cord Medicine

29.Title: Osteoporosis in Individuals with Spinal Cord Injury
Citation: PM and R, February 2015, vol./is. 7/2(188-201), 1934-1482 (01 Feb 2015)
Author(s): Bauman W.A., Cardozo C.P.
Language: English
Abstract: The pathophysiology, clinical considerations, and relevant experimental findings with regard to osteoporosis in individuals with spinal cord injury (SCI) will be discussed. The bone loss that occurs acutely after more neurologically motor complete SCI is unique for its sublesional skeletal distribution and rate, at certain skeletal sites approaching 1% of bone mineral density per week, and its resistance to currently available treatments. The areas of high bone loss include the distal femur, proximal tibia, and more distal boney sites. Evidence from a study performed in monozygotic twins discordant for SCI indicates that sublesional bone loss in the twin with SCI increases for several decades, strongly suggesting that the heightened net bone loss after SCI may persist for an extended period of time. The increased frequency of fragility fracture after paralysis will be discussed, and a few risk factors for such fractures after SCI will be examined. Because vitamin D deficiency, regardless of disability, is a relevant consideration for bone health, as well as an easily reversible condition, the increased prevalence of and treatment target values for vitamin D in this deficiency state in the SCI population will be reviewed. Pharmacological and mechanical approaches to preserving bone integrity in persons with acute and chronic SCI will be reviewed, with emphasis placed on efficacy and practicality. Emerging osteoanabolic agents that improve functioning of WNT/beta-catenin signaling after paralysis will be introduced as therapeutic interventions that may hold promise.

Publication type: Journal: Article
Source: EMBASE

30.Title: Patient experience survey in telemedicine for spinal cord injury patients.
Citation: Spinal Cord, 01 April 2015, vol./is. 53/4(320-323), 13624393
Author(s): Yuen, J, Thiagarajan, C A, Belci, M
Language: English
Abstract: Study design: Patient feedback study. Objectives: To measure how patients value the telemedicine consultation service at the National Spinal Injuries Centre over a period of 8 months. Setting: United Kingdom (south of England). Methods: Telephone survey conducted by an external surveyor who does not work in the department. Results: Our study showed that most patients (n=29) found the service of high quality and useful to their care. Conclusion: This provides evidence, from the spinal cord injury patients' perspective, that telemedicine service has an important role in their management.

Publication type: Journal article
Source: CINAHL
Full text: Available Nature Publishing Group at Spinal Cord

31.Title: Postural control during gait initiation and termination of adults with incomplete spinal cord injury
Citation: Human Movement Science, June 2015, vol./is. 41/(20-31), 0167-9457;1872-7646 (June 01, 2015)
Author(s): Lemay J.-F., Duclos C., Nadeau S., Gagnon D.H.
Language: English
Abstract: Gait initiation and termination are potentially challenging tasks for balance due to the transition from a quasi-
static bipedal phase to a dynamic single-support phase. The purpose of this study was to compare the bipedal and single-support phases of gait initiation and termination in individuals with incomplete spinal cord injury (ISCI). Twelve individuals with ISCI were evaluated on the dynamic and postural components of balance using the stabilizing and destabilizing forces during gait initiation, termination and natural gait. Phase comparisons were made using non parametric tests. Visual inspection of the force profile of the factors explaining the forces was also conducted. Gait termination challenged more the postural control during the single-support phase than the bipedal phase for the dynamic component of the stabilizing/destabilizing forces model (p = .002). For gait initiation, the most challenging phase varied with the components analyzed (single-support phase for the dynamic component, bipedal phase for the postural component) (p = .008). The single support phase is more challenged during gait termination (both components) (p< .015) while the bipedal phase is more challenged during gait initiation (dynamic components) (p = .012). The stabilizing force and the speed of the center of mass on the one hand, and destabilizing force and the distance between the center of pressure and the base of support on the other hand, had a similar profile. The single-support phase of gait termination was the most challenging among all phases evaluated, being as challenging as the single-support phase of level natural gait. This phase should be targeted in rehabilitation in order to improve balance and decrease the risk of falling in this population.

**Publication type:** Journal: Article

**Source:** EMBASE

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32. **Title:** Pressure changes under the ischial tuberosities during gluteal neuromuscular stimulation in spinal cord injury: A comparison of sacral nerve root stimulation with surface functional electrical stimulation

**Citation:** Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(620-626), 0003-9993;1532-821X (01 Apr 2015)

**Author(s):** Liu L.Q., Ferguson-Pell M.

**Language:** English

**Abstract:** Objective To compare the magnitude of interface pressure changes during gluteal maximus contraction by stimulating sacral nerve roots with surface electrical stimulations in patients with spinal cord injuries (SCI). Design Pilot interventional study. Setting Spinal injury research laboratory. Participants Adults (N=18) with suprasacral complete SCI. Interventions Sacral nerve root stimulation (SNRS) via a functional magnetic stimulator (FMS) or a sacral anterior root stimulator (SARS) implant; and surface functional electrical stimulation (FES). Main Outcome Measures Interface pressure under the ischial tuberosity (IT) defined as peak pressure, gradient at peak pressure, and average pressure. Results With optimal FMS, a 29% average reduction of IT peak pressure was achieved during FMS (mean +/- SD: 160.1 +/- 24.3mmHg at rest vs 114.7 +/- 18.0mmHg during FMS, t<sub>sub>5</sub>=5.3, P=.002). A 30% average reduction of peak pressure during stimulation via an SARS implant (143.2 +/- 31.7mmHg at rest vs 98.5 +/- 21.5mmHg during SARS, t<sub>sub>5</sub>=4.4, P=.007) and a 22% average decrease of IT peak pressure during FES stimulation (153.7 +/- 34.8mmHg at rest vs 120.5 +/- 26.1mmHg during FES, t<sub>sub>5</sub>=5.3, P=.003) were obtained. In 4 participants who completed both the FMS and FES studies, the percentage of peak pressure reduction with FMS was slightly greater than with FES (mean difference, 7.8%; 95% confidence interval, 1.6%-14.0; P=.04). Conclusions SNRS or surface FES can induce sufficient gluteus maximus contraction and significantly reduce ischial pressure. SNRS via an SARS implant may be more convenient and efficient for frequently activating the gluteus maximus.

**Publication type:** Journal: Article

**Source:** EMBASE

**Full text:** Available ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION at Archives of Physical Medicine and Rehabilitation

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33. **Title:** Prospective study of deep vein thrombosis in patients with spinal cord injury not receiving anticoagulant therapy.

**Citation:** Spinal Cord, 01 April 2015, vol./is. 53/4(306-309), 13624393

**Author(s):** Matsumoto, S, Suda, K, limoto, S, Yasui, K, Komatsu, M, Ushiku, C, Takahata, M, Kobayashi, Y, Tojo, Y, Fujita, K, Minami, A

**Language:** English

**Abstract:** Study Design:Prospective cross-sectional study.Objectives:To investigate the timing of deep vein thrombosis (DVT) onset secondary to spinal cord injury without anticoagulant therapies.Setting:Spinal Cord Injury Center in Hokkaido, Japan.Methods:Between November 2012 and June 2013, patients with spinal cord injury who were admitted to our hospital within 1 day after the injury and treated surgically within 24 h underwent a neurological examination, leg vein ultrasonography and D-dimer test 1, 3, 7, 14 and 28 days after surgery. All patients received treatment with intermittent pneumatic compression and elastic stockings, but without any anticoagulant.Results:DVT developed in 12 patients (11 men and 1 women), with a mean age of 62.2 years (range, 41-80 years; mean age of total sample, 63.2 years (range, 25-78 years)), all distal to the popliteal vein. DVT occurred more often with a more severe paralysis (66.3%, AIS A and B). The median (± standard error) length of time from the operation to DVT detection was 7.5±2.2 days. The mean D-dimer level
upon DVT detection was 14.6±11.8 µg ml<sup>-1</sup>, with no significant differences between those who developed DVT and those who did not at any of the time points. Conclusion: These results suggest that DVT can develop at the very-acute stage of spinal cord injury and the incidence increases with a more severe paralysis. DVT detection was more reliable with ultrasonography, which should be used with DVT-preventive measures, beginning immediately after the injury, for the management of patients with spinal cord injury.

**Publication type:** journal article  
**Source:** CINahl  
**Full text:** Available Nature Publishing Group at Spinal Cord

34. **Title:** Resilience in the initial year of caregiving for a family member with a traumatic spinal cord injury  
**Citation:** Journal of Consulting and Clinical Psychology, 2015, vol./is. 82/6(1072-1086), 0022-006X;1939-2117 (2015)  
**Author(s):** Elliott T.R., Berry J.W., Richards J.S., Shewchuk R.M.  
**Language:** English  
**Abstract:** Objective: Individuals who assume caregiving duties for a family member disabled in a traumatic injury often exhibit considerable distress, yet few studies have examined characteristics of those who may be resilient in the initial year of caregiving. Reasoning from the influential Pearlin model of caregiving (Pearlin & Aneshensel, 1994) and the resilience process model (Bonanno, 2005), we expected a significant minority of caregivers would be chronically distressed and another group would be resilient throughout the inaugural year of caregiving for a person with a traumatic spinal cord injury (SCI), and these groups would differ significantly in primary and secondary stress and in personal resources and mediators. Method: Twenty men and 108 women who identified as caregivers for a family member who incurred a traumatic SCI consented to complete measures during the inpatient rehabilitation and at 1 month, 6 months, and 12 months postdischarge. Results: Latent growth mixture modeling of depression symptoms over time revealed 3 groups of caregivers: chronic (24%), recovery (24%) and resilient (48%). The chronic group reported more anxiety, negative affect, and ill health than the other 2 groups throughout the year. The resilient group was best characterized by their enduring levels of positive affect and supportive social networks. Conclusions: A large percentage of individuals are resilient in the initial year of caregiving, and those who have problems adapting exhibit significant distress soon following the traumatic event. Early detection of and psychological interventions for individuals who have difficulty adjusting are indicated, as their distress is unlikely to abate untreated over the year.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available ProQuest at Journal of Consulting and Clinical Psychology

35. **Title:** Restoring walking after spinal cord injury: Operant conditioning of spinal reflexes can help  
**Citation:** Neuroscientist, April 2015, vol./is. 21/2(203-215), 1073-8584;1089-4098 (19 Apr 2015)  
**Author(s):** Thompson A.K., Wolpaw J.R.  
**Language:** English  
**Abstract:** People with incomplete spinal cord injury (SCI) frequently suffer motor disabilities due to spasticity and poor muscle control, even after conventional therapy. Abnormal spinal reflex activity often contributes to these problems. Operant conditioning of spinal reflexes, which can target plasticity to specific reflex pathways, can enhance recovery. In rats in which a right lateral column lesion had weakened right stance and produced an asymmetrical gait, up-conditioning of the right soleus H-reflex, which increased muscle spindle afferent excitation of soleus, strengthened right stance and eliminated the asymmetry. In people with hyperreflexia due to incomplete SCI, down-conditioning of the soleus H-reflex improved walking speed and symmetry. Furthermore, modulation of electromyographic activity during walking improved bilaterally, indicating that a protocol that targets plasticity to a specific pathway can trigger widespread plasticity that improves recovery far beyond that attributable to the change in the targeted pathway. These improvements were apparent to people in their daily lives. They reported walking faster and farther, and noted less spasticity and better balance. Operant conditioning protocols could be developed to modify other spinal reflexes or corticospinal connections; and could be combined with other therapies to enhance recovery in people with SCI or other neuromuscular disorders.

**Publication type:** Journal: Review  
**Source:** EMBASE

36. **Title:** Sacral anterior root stimulation improves bowel function in subjects with spinal cord injury.  
**Citation:** Spinal Cord, 01 April 2015, vol./is. 53/4(297-301), 13624393  
**Author(s):** Rasmussen, M M, Kutzenberger, J, Krogh, K, Zepke, F, Bodin, C, Domurath, B, Christensen, P  
**Language:** English  
**Abstract:** Study design: Cross-sectional study. Objective: To evaluate the long-term effect of the sacral anterior root stimulator (SARS) on neurogenic bowel dysfunction in a large, well defined spinal cord injury (SCI) cohort. Setting: Department of Neuro-Urology, Bad Wildungen, Germany. Methods: Subjects undergone surgery at for SARS-SDAF (sacral deafferentation) between September 1986 and July 2011 (n=587) answered a questionnaire. In total, 277 SARS subjects were available for the baseline (recall) and follow-up comparison. Results: Median age was 49 years (range:
37. **Title:** Safety and efficacy of at-home robotic locomotion therapy in individuals with chronic incomplete spinal cord injury: A Prospective, pre-post intervention, proof-of-concept study  
**Citation:** PLoS ONE, March 2015, vol./is. 10/3, 1932-6203 (24 Mar 2015)  
**Author(s):** Rupp R., Schliessmann D., Plewa H., Schuld C., Gerner H.J., Weidner N., Hofer E.P., Knestel M.  
**Language:** English  
**Abstract:** Background: The compact Motorized orthosis for home rehabilitation of Gait (MoreGait) was developed for continuation of locomotion training at home. MoreGait generates afferent stimuli of walking with the user in a semi-supine position and provides feedback about deviations from the reference walking pattern. Objective: Prospective, pre-post intervention, proof-of-concept study to test the feasibility of an unsupervised home-based application of five MoreGait prototypes in subjects with incomplete spinal cord injury (iSCI). Methods: Twenty-five (5 tetraplegia, 20 paraplegia) participants with chronic (mean time since injury: 5.8 +/- 5.4 (standard deviation, SD) years) sensorimotor iSCI (7 ASIA Impairment Scale (AIS) C, 18 AIS D; Walking Index for Spinal Cord Injury (WISCI II): Interquartile range 9 to 16) completed the training (45 minutes/day, at least 4 days/week, 8 weeks). Baseline status was documented 4 and 2 weeks before and at training onset. Training effects were assessed after 4 and 8 weeks of therapy. Results: After therapy, 9 of 25 study participants improved with respect to the dependency on walking aids assessed by the WISCI II. For all individuals, the short-distance walking velocity measured by the 10-Meter Walk Test showed significant improvements compared to baseline (100%) for both self-selected (Mean 139.4% +/- 35.5(SD)) and maximum (Mean 143.1% +/- 40.6(SD)) speed conditions as well as the endurance estimated with the sixminute walk test (Mean 166.6% +/- 72.1% (SD)). One device-related adverse event (pressure sore on the big toe) occurred in over 800 training sessions. Conclusions: Home-based robotic locomotion training with MoreGait is feasible and safe. The magnitude of functional improvements achieved by MoreGait in individuals with iSCI is well within the range of complex locomotion robots used in hospitals. Thus, unsupervised MoreGait training potentially represents an option to prolong effective training aiming at recovery of locomotor function beyond in-patient rehabilitation. Trial Registration: German Clinical Trials Register (DKRS) DRKS00005587  
**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available ProQuest at PLoS ONE  

38. **Title:** Secondary neurological deterioration in traumatic spinal injury: Data from medicolegal cases  
**Citation:** Bone and Joint Journal, April 2015, vol./is. 97B/4(527-531), 2049-4394;2049-4408 (01 Apr 2015)  
**Author(s):** Todd N.V., Skinner D., Wilson-MacDonald J.  
**Language:** English  
**Abstract:** We assessed the frequency and causes of neurological deterioration in 59 patients with spinal cord injury on whom reports were prepared for clinical negligence litigation. In those who deteriorated neurologically we assessed the causes of the change in neurology and whether that neurological deterioration was potentially preventable. In all 27 patients (46%) changed neurologically, 20 patients (74% of those who deteriorated) had no primary neurological deficit. Of those who deteriorated, 13 (48%) became Frankel A. Neurological deterioration occurred in 23 of 38 patients (61%) with unstable fractures and/or dislocations; all 23 patients probably deteriorated either because of failures to immobilise the spine or because of inappropriate removal of spinal immobilisation. Of the 27 patients who altered neurologically, neurological deterioration was, probably, avoidable in 25 (excess movement in 23 patients with unstable injuries, failure to evacuate an epidural haematoma in one patient and over-dystaxia following manipulation of the cervical spine in one patient). If existing guidelines and standards for the management of actual or potential spinal cord injury had been followed, neurological deterioration would have been prevented in 25 of the 27 patients (93%) who experienced a deterioration in their neurological status.  
**Publication type:** Journal: Article  
**Source:** EMBASE
39.Title: Selective alpha adrenergic antagonist reduces severity of transient hypertension during sexual stimulation after spinal cord injury
Citation: Journal of Neurotrauma, March 2015, vol./is. 32/6(392-396), 0897-7151;1557-9042 (15 Mar 2015)
Author(s): Phillips A.A., Elliott S.L., Zheng M.M.Z., Krassioukov A.V.
Language: English
Abstract: On a daily basis, the majority of those with high-level spinal cord injury have autonomic dysreflexia, which describes a life-threatening episode of transient extreme hypertension (i.e., as high as 300 mm Hg) as many as 90% of people living with this condition. Unfortunately, ejaculation is a major initiating factor for autonomic dysreflexia, which discourages sexual activity. In order to obtain a sperm specimen, or for initial assessment of fertility, penile vibrostimulation is clinically performed. Nifedipine, a selective calcium channel blocker, is the most commonly prescribed pharmaceutical for a priori management of autonomic dysreflexia secondary to ejaculation or other causes; however, it is limited because of its potential exacerbation of low resting pressure, which also affects this population. The present study examined the effect of a short-acting selective alpha antagonist (prazosin) on autonomic dysreflexia severity using a randomized placebo trial during medically supervised penile vibrostimulation in six males with cervical spinal cord injury. Beat-by-beat blood pressure and heart rate were recorded throughout penile vibrostimulation during placebo and prazosin-treated days. The increase in systolic blood pressure was mitigated during vibrostimulation in subjects administered prazosin as compared with those administered placebo (+140+/−19 mm Hg vs. +96+/−14 mmHg; p<0.05). On average, the peak in systolic blood pressure was 46 mm Hg lower during penile vibrostimulation when patients were administered prazosin (p<0.05), whereas resting blood pressure was not affected. Prazosin appears to be effective at reducing the severity of autonomic dysreflexia during sexual stimulation in patients with spinal cord injury, without exacerbating resting hypotension in high-level spinal cord injury.
Publication type: Journal: Article
Source: EMBASE

40.Title: Serum sCD95L concentration in patients with spinal cord injury
Citation: Journal of International Medical Research, April 2015, vol./is. 43/2(250-256), 0300-0605;1473-2300 (19 Apr 2015)
Author(s): Biglari B., Buchler A., Swing T., Child C., Biehl E., Reitzel T., Bruckner T., Ferbert T., Korff S., Rief H., Gerner H.-J., Moghaddam A.
Language: English
Abstract: Objective To determine serum concentrations of soluble CD95 ligand (sCD95L) in patients with traumatic spinal cord injury. Methods Patients with traumatic spinal cord injury were recruited. Blood was collected on admission to hospital and at 4h, 9h, 12h, 24h, 3 days, 7 days, and 2, 4, 8 and 12 weeks postadmission. Serum concentrations of sCD95L were determined via immunoassay. Result The study included 23 patients. Mean sCD95L concentrations were significantly lower at 4h, 9h, 12h and 24h than at admission, and were significantly higher at 8 and 12 weeks, compared with admission. Conclusion The serum sCD95L concentration fell significantly during the first 24h after traumatic spinal cord injury. Concentrations then rose, becoming significantly higher than admission levels at 8 weeks. sCD95L may represent a possible therapeutic target for traumatic spinal cord injury.
Publication type: Journal: Article
Source: EMBASE
Full text: Available JOURNAL OF INTERNATIONAL MEDICAL RESEARCH at Journal of International Medical Research
Full text: Available JOURNAL OF INTERNATIONAL MEDICAL RESEARCH at Salisbury District Hospital Healthcare Library

41.Title: Sexuality for women with spinal cord injury.
Citation: Journal of sex & marital therapy, May 2015, vol. 41, no. 3, p. 238-253 (2015 May-Jun)
Author(s): Cramp, Jackie D, Courtois, Frédérique J, Ditor, David S
Abstract: The authors conducted a review of the literature on women's sexuality after spinal cord injury, including studies from 1990 to 2011 retrieved from PubMed. Several facets of a woman's sexuality are negatively affected by after spinal cord injury, and consequently, sexual satisfaction has been shown to decrease, which also negatively affects quality of life. Neurogenic bladder is common after spinal cord injury, and the resulting urinary incontinence is a top therapeutic priority of this population. To improve sexual satisfaction and quality of life for women with spinal cord injury, future research needs to explore the effects of urinary incontinence on various aspects of sexuality.
Source: Medline

42.Title: Should suspected cervical spinal cord injury be immobilised?: A systematic review
Citation: Injury, April 2015, vol./is. 46/4(528-535), 0020-1383;1879-0267 (01 Apr 2015)
Author(s): Oteir A.O., Smith K., Stoelwinder J.U., Middleton J., Jennings P.A.
Language: English
Abstract: Background Spinal cord injuries occur worldwide; often being life-threatening with devastating long term impacts on functioning, independence, health, and quality of life. Objectives Systematic review of the literature to determine the efficacy of cervical spinal immobilisation (vs no immobilisation) in patients with suspected cervical spinal cord injury (CSCI); and to provide recommendations for prehospital spinal immobilisation. Methods Searches were conducted of the Cochrane library, CINAHL, EMBASE, Pubmed, Scopus, Web of science, Google scholar, and OvidSP (MEDLINE, PsycINFO, and DARE) databases. Studies were included if they were relevant to the research question, published in English, based in the prehospital setting, and included adult patients with traumatic injury. Results The search identified 1471 citations, of which eight observational studies of variable quality were included. Four studies were retrospective cohorts, three were case series and one a case report. Cervical collar application was reported in penetrating trauma to be associated with unadjusted increased risk of mortality in two studies [(OR, 8.82; 95% CI, 1.09-194; p = 0.038) & (OR, 2.06; 95% CI, 1.35-3.13)], concealment of neck injuries in one study and increased scene time in another study. While, in blunt trauma, one study indicated that immobilisation might be associated with worsened neurological outcome (OR, 2.03; 95% CI, 1.03-3.99; p = 0.04, unadjusted). We did not attempt to combine study results due to significant heterogeneity of study design and outcome measures. Conclusion There is a lack of high-level evidence on the effect of prehospital cervical spine immobilisation on patient outcomes. There is a clear need for large prospective studies to determine the clinical benefit of prehospital spinal immobilisation as well as to identify the subgroup of patients most likely to benefit.

Publication type: Journal: Review
Source: EMBASE

43.Title: Temporizing after Spinal Cord Injury.
Citation: Hastings Center Report, 01 March 2015, vol./is. 45/2(8-10), 00930334
Author(s): Volpe, Rebecca L., Crites, Joshua S., Kirschner, Kristi L.
Language: English
Abstract: Mr. C is a twenty-two-year-old who was flown to a level-1 trauma center after diving headfirst into shallow water. Prior to this accident, he was in excellent health. At the scene, he had been conscious but was paralyzed and had no sensation below his neck. The emergency medical services team immobilized Mr. C's neck with a cervical collar and intubated him for airway protection before transport. As Mr. C's medical care proceeds, he expresses a desire for extubation, although it was not clear that he had the capacity to make this (or any other) decision. It also was unclear whether this desire reflected his authentic wishes to be allowed to die or stemmed from feelings of discomfort and agitation. Over a period of several days, Mr. C's sedation was lightened, and the psychiatry service conducted a formal decision-making capacity assessment. Mr. C continues to express a desire to withdraw life-sustaining medical treatment. However, the psychiatry service is concerned that Mr. C seems to lack adequate insight into what it would mean to die. What does it mean to respect Mr. C's autonomy?

Publication type: journal article
Source: CINAHL

44.Title: The efficiency of mechanical orthoses in affecting parameters associated with daily living in spinal cord injury patients: a literature review.
Citation: Disability & Rehabilitation: Assistive Technology, 01 May 2015, vol./is. 10/3(183-190), 17483107
Author(s): Ahmadi Bani, Monireh, Arazpour, Mokhtar, Farahmand, Farzam, Mousavi, Mohmmad Ebrahim, Hutchins, Stephen William
Language: English
Abstract: Objective: The most simple and common approach in providing standing and walking by subjects with spinal cord injury (SCI) is the use of mechanical orthoses. These include traditional orthoses, medial linkage orthoses (MLOs) and reciprocating gait orthoses (RGOs). Independence, energy expenditure, gait parameters, system reliability and cosmesis are important factors in orthotic design. The aim of this review was to compare the evidence of existing mechanical orthoses to that of other types regarding these factors. Methods: The preferred reporting items for systematic reviews and meta-analyses (PRISMA) method was used by an experience researcher based on selected keywords and their composition and an electronic search was performed in well-known databases. Results: Twenty articles were selected for final evaluation. Many were case studies, and also had limited and heterogeneous sample sizes with different instruments used for evaluation. The results of the analysis demonstrated that independence and cosmesis are improved when using MLOs, but gait parameters, energy expenditure and stability are all improved when using RGOs. Conclusion: Those mechanical orthoses which have reciprocal motion and congruency between the anatomical and orthotic joints have been shown to provide positive effects on patient lifestyles. However, further improvement is needed to more effectively meet the needs of SCI patients.

Publication type: journal article
Source: CINAHL

45.Title: Transcranial magnetic stimulation after spinal cord injury
Abstract: Objective To review the basic principles and techniques of transcranial magnetic stimulation (TMS) and provide information and evidence regarding its applications in spinal cord injury clinical rehabilitation. Methods A review of the available current and historical literature regarding TMS was conducted, and a discussion of its potential use in spinal cord injury rehabilitation is presented. Results TMS provides reliable information about the functional integrity and conduction properties of the corticospinal tracts and motor control in the diagnostic and prognostic assessment of various neurological disorders. It allows one to follow the evolution of motor control and to evaluate the effects of different therapeutic procedures. Motor-evoked potentials can be useful in follow-up evaluation of motor function during treatment and rehabilitation, specifically in patients with spinal cord injury and stroke. Although studies regarding somatomotor functional recovery after spinal cord injury have shown promise, more trials are required to provide strong and substantial evidence. Conclusions TMS is a promising noninvasive tool for the treatment of spasticity, neuropathic pain, and somatomotor deficit after spinal cord injury. Further investigation is needed to demonstrate whether different protocols and applications of stimulation, as well as alternative cortical sites of stimulation, may induce more pronounced and beneficial clinical effects.

Publication type: Journal: Review
Source: EMBASE

46. Title: Transfer of the brachialis to the anterior interosseous nerve as a treatment strategy for cervical spinal cord injury: Technical note
Citation: Global Spine Journal, August 2015, vol./is. 5/2(110-117), 2192-5682;2192-5690 (06 Aug 2014)
Author(s): Hawasli A.H., Chang J., Reynolds M.R., Ray W.Z.
Language: English
Abstract: Study Design Technical report. Objective To provide a technical description of the transfer of the brachialis to the anterior interosseous nerve (AIN) for the treatment of tetraplegia after a cervical spinal cord injury (SCI). Methods In this technical report, the authors present a case illustration of an ideal surgical candidate for a brachialis-to-AIN transfer: a 21-year-old patient with a complete C7 spinal cord injury and failure of any hand motor recovery. The authors provide detailed description including images and video showing how to perform the brachialis-to-AIN transfer. Results The brachialis nerve and AIN fascicles can be successfully isolated using visual inspection and motor mapping. Then, careful dissection and microsurgical coaptation can be used for a successful anterior interosseous reinnervation. Conclusion The nerve transfer techniques for reinnervation have been described predominantly for the treatment of brachial plexus injuries. The majority of the nerve transfer techniques have focused on the upper brachial plexus or distal nerves of the lower brachial plexus. More recently, nerve transfers have reemerged as a potential reinnervation strategy for select patients with cervical SCI. The brachialis-to-AIN transfer technique offers a potential means for restoration of intrinsic hand function in patients with SCI.
Publication type: Journal: Article
Source: EMBASE

47. Title: Treatment of detrusor external sphincter dyssynergia using ultrasound-guided trocar catheter transurethral botulinum toxin A injection in men with spinal cord injury
Citation: Archives of Physical Medicine and Rehabilitation, April 2015, vol./is. 96/4(614-619), 0003-9993;1532-821X (01 Apr 2015)
Language: English
Abstract: Objective To evaluate the effects of transrectal ultrasound-guided trocar catheter transurethral botulinum toxin A (BTX-A) injection into the external urethral sphincter (EUS) for treating detrusor external sphincter dyssynergia (DESD) in men with spinal cord injury (SCI). Design Descriptive study. Setting Hospital rehabilitation department. Participants Patients (N=15; mean age, 40.5y; range, 22-64y) with suprasacral SCI with confirmed DESD determined by urodynamic study. Interventions A single dose of 100U BTX-A was injected into the EUS via transrectal ultrasound-guided trocar catheter transurethral injection. Main Outcome Measures Maximal detrusor pressure, detrusor leak point pressure, maximal pressure on static urethral pressure profilometry, postvoid residual volume, and maximal flow rate. Results After BTX-A transurethral injection, 4 (28.5%) patients showed an excellent result and 7 (46.7%) patients showed an improved result, whereas 4 (28.5%) patients experienced treatment failure. The overall success rate was 75.2%. We observed a significant decrease in static urethral pressure (<0.05) and detrusor leak point pressure after treatment (<0.05), but not in detrusor pressure. The postvoid residual volume were significantly decreased in the fourth week after treatment (<0.05). Conclusions Transrectal ultrasound-guided trocar catheter transurethral BTX-A injection into the EUS effectively suppresses or ameliorates DESD. A potential advantage of the method is that ultrasound guidance may not be necessary in the next injection.
Publication type: Journal: Article
Title: Trigemino-cervical-spinal reflexes after traumatic spinal cord injury
Citation: Clinical Neurophysiology, May 2015, vol./is. 126/5(983-986), 1388-2457;1872-8952 (01 May 2015)
Author(s): Nardone R., Holler Y., Orioli A., Brigo F., Christova M., Tezzon F., Golaszewski S., Trinka E.
Language: English
Abstract: Objective: After spinal cord injury (SCI) reorganization of spinal cord circuits occur both above and below the spinal lesion. These functional changes can be determined by assessing electrophysiological recording. We aimed at investigating the trigemino-cervical reflex (TCR) and trigemino-spinal reflex (TSR) responses after traumatic SCI. Methods: TCR and TSR were registered after stimulation of the infraorbital nerve from the sternocleidomastoid, splenius, deltoid, biceps and first dorsal interosseus muscles in 10 healthy subjects and 10 subjects with incomplete cervical SCI. Results: In the control subjects reflex responses were registered from the sternocleidomastoid, and splenium muscles, while no responses were obtained from upper limb muscles. In contrast, smaller but clear short latency EMG potentials were recorded from deltoid and biceps muscles in about half of the SCI patients. Moreover, the amplitudes of the EMG responses in the neck muscles were significantly higher in patients than in control subjects. Conclusion: The reflex responses are likely to propagate up the brainstem and down the spinal cord along the reticulospinal tracts and the propriospinal system. Despite the loss of corticospinal axons, synaptic plasticity in pre-existing pathways and/or formation of new circuits through sprouting processes above the injury site may contribute to the findings of this preliminary study and may be involved in the functional recovery. Significance: Trigemino-cervical-spinal reflexes can be used to demonstrate and quantify plastic changes at brainstem and cervical level following SCI.
Publication type: Journal: Article
Source: EMBASE

Title: Trunk and shoulder kinematic and kinetic and electromyographic adaptations to slope increase during motorized treadmill propulsion among manual wheelchair users with a spinal cord injury
Citation: BioMed Research International, February 2015, vol./is. 2015/, 2314-6133;2314-6141 (22 Feb 2015)
Author(s): Gagnon D., Babineau A.-C., Champagne A., Desroches G., Aissaoui R.
Language: English
Abstract: The main objective was to quantify the effects of five different slopes on trunk and shoulder kinematics as well as shoulder kinetic and muscular demands during manual wheelchair (MWC) propulsion on a motorized treadmill. Eighteen participants with spinal cord injury propelled their MWC at a self-selected constant speed on a motorized treadmill set at different slopes (0degree, 2.7degree, 3.6degree, 4.8degree, and 7.1degree). Trunk and upper limb movements were recorded with a motion analysis system. Net shoulder joint moments were computed with the forces applied to the handrims measured with an instrumented wheel. To quantify muscular demand, the electromyographic activity (EMG) of the pectoralis major (clavicular and sternal portions) and deltoid (anterior and posterior fibers) was recorded during the experimental tasks and normalized against maximum EMG values obtained during static contractions. Overall, forward trunk flexion and shoulder flexion increased as the slope became steeper, whereas shoulder flexion, adduction, and internal rotation moments along with the muscular demand also increased as the slope became steeper. The results confirm that forward trunk flexion and shoulder flexion movement amplitudes, along with shoulder mechanical and muscular demands, generally increase when the slope of the treadmill increases despite some similarities between the 2.7degree to 3.6degree and 3.6degree to 4.8degree slope increments.
Publication type: Journal: Article
Source: EMBASE

Title: Urethral strictures in men with neurogenic lower urinary tract dysfunction using intermittent catheterization for bladder evacuation.
Citation: Spinal Cord, 01 April 2015, vol./is. 53/4(310-313), 13624393
Author(s): Krebs, J, Wöllner, J, Pannek, J
Language: English
Abstract: Study design:Retrospective investigation.Objectives:To investigate the occurrence, characteristics and clinical consequences of urethral strictures in men with neurogenic lower urinary tract dysfunction (NLUTD) using intermittent catheterization (IC) for bladder evacuation.Setting:Spinal cord injury rehabilitation center.Methods:The patient database was screened for men with NLUTD who had presented for a routine video-urodynamic investigation between 2008 and 2012. Patient characteristics, bladder diary details, the occurrence of urethral strictures and performed urethroty
51. Title: Valproic acid-mediated neuroprotection and neurogenesis after spinal cord injury: From mechanism to clinical potential

Citation: Regenerative Medicine, March 2015, vol./is. 10/2(193-209), 1746-0751;1746-076X (01 Mar 2015)

Author(s): Chu T., Zhou H., Lu L., Kong X., Wang T., Pan B., Feng S.

Language: English

Abstract: Spinal cord injury (SCI) is difficult to treat because of secondary injury. Valproic acid (VPA) is clinically approved for mood stabilization, but also counteracts secondary damage to functionally rescue SCI in animal models by improving neuroprotection and neurogenesis via inhibition of HDAC and GSK-3. However, a comprehensive review summarizing the therapeutic benefits and mechanisms of VPA for SCI and the issues affecting clinical trials is lacking, limiting future research on VPA and impeding its translation into clinical therapy for SCI. This article presents the current status of VPA treatment for SCI, emphasizing interactions between enhanced neuroprotection and neurogenesis. Crucial issues are discussed to optimize its clinical potential as a safe and effective treatment for SCI.

Publication type: Journal: Review
Source: EMBASE

52. Title: Venlafaxine extended-release for depression following spinal cord injury a randomized clinical trial

Citation: JAMA Psychiatry, March 2015, vol./is. 72/3(247-258), 2168-622X (01 Mar 2015)


Language: English

Abstract: IMPORTANCE: Depression is prevalent and associated with negative outcomes in individuals with spinal cord injury (SCI). Antidepressants are used routinely to treat depression, yet no placebo-controlled trials have been published in this population to our knowledge. OBJECTIVE: To determine the efficacy and tolerability of venlafaxine hydrochloride extended-release (XR) for major depressive disorder (MDD) or dysthymic disorder in persons with chronic SCI. DESIGN, SETTING, AND PARTICIPANTS: Multisite, randomized (1:1), double-blind, placebo-controlled Project to Improve Symptoms and Mood After SCI (PRISMS) trial. All research staff conducting screening, intervention, and outcome procedures were blinded to randomization status. We screened 2536 patients from outpatient clinics at 6 SCI treatment centers in the United States and randomized 133 participants into the trial. Participants were 18 to 64 years old and at least 1 month after SCI, with MDD or dysthymic disorder. Seventy-four percent of participants were male, and participants were on average 40 years old and 11 years after SCI. Forty-seven percent had cervical injuries, 53.4% had American Spinal Injury Association injury severity A (complete injury) SCI, 24.1% had at least 2 prior MDD episodes, and 99.2% had current MDD. Common comorbidities included chronic pain (93.9%), significant anxiety (57.1%), and history of substance dependence (44.4%). INTERVENTIONS: Twelve-week trial of venlafaxine XR vs placebo using a flexible-dose algorithm. MAIN OUTCOMES AND MEASURES: The Hamilton Depression Rating Scale (HAM-D 17-item version and Maier subscale, which focuses on core depression symptoms and excludes somatic symptoms) over 12 weeks. RESULTS: Mixed-effects models revealed a significant difference between the venlafaxine XR and placebo groups in improvement on the Maier subscale from baseline to 12 weeks (treatment effect, 1.6; 95%CI, 0.3-2.9; P = .02) but not on the HAM-D 17-item version (treatment effect, 1.0; 95%CI, -1.4 to 3.4; P = .42). Participants receiving venlafaxine XR reported significantly less SCI-related disability on the Sheehan Disability Scale at 12 weeks compared with placebo (treatment effect, 4.7; 95%CI, 1.5-7.8; P = .005). Blurred vision was the only significantly more common new or worsening adverse effect in the venlafaxine XR group compared with the placebo group over 12 weeks. CONCLUSIONS AND RELEVANCE: Venlafaxine XR was well tolerated by most patients and an effective antidepressant for decreasing core symptoms of depression and improving SCI-related disability. Further research is needed to determine the optimal treatment and measurement approaches for depression in chronic SCI.

Publication type: Journal: Article
Title: “Don’t Think Paralysis Takes Away Your Womanhood”: Sexual Intimacy After Spinal Cord Injury.

Citation: American Journal of Occupational Therapy, 01 March 2015, vol./is. 69/2(1-10), 02729490

Author(s): Fritz, Heather A., Dillaway, Heather, Lysack, Cathy L.

Language: English

Abstract: Sexuality and intimacy are important components of health and well-being. Issues surrounding sexuality and intimacy are equally important for men and women living with physical disabilities, including spinal cord injury (SCI). Yet, women’s sexuality after SCI remains largely unexamined. This article presents the findings from an in-depth qualitative investigation of the sexual and reproductive health experiences of 20 women with SCI in or around Detroit, MI. Findings echo existing literature documenting the sexual consequences of life after SCI and suggest new areas of inquiry important for better addressing sexual concerns across the lifespan. Specifically, findings suggest a need to consider the variable effects of SCI on sexual intimacy in relation to a person’s developmental trajectory, the appropriate timing of sexual education, the need to expand conceptualizations of sexual intimacy, and the ways SCI may affect sexuality in later life.

Publication type: journal article

Source: CINAHL

Full text: Available The American journal of occupational therapy. : official publication of the American Occupational Therapy Association at American Journal of Occupational Therapy, The

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