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Current Awareness Bulletin – Spinal Cord Injuries
November 2014

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Guidelines

National Institute for Health and Care Excellence

Parafricta Bootees and Undergarments to reduce skin breakdown in people with or at risk of pressure ulcers
NICE medical technologies guidance [MTG20] Published date: November 2014

New and Updated Cochrane Systematic Reviews

New Reviews – October 2014

Surgical approaches for cervical spine facet dislocations in adults

Updated Reviews – November 2014

Protocolized versus non-protocolized weaning for reducing the duration of mechanical ventilation in critically ill adult patients

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1. Title: A Life Course Perspective to Spinal Cord Injury and Employment Participation in Canada.
   Citation: Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(310-320), 10820744
   Author(s): Jetha, Arif, Dumont, Frédéric S., Noreau, Luc, Leblond, Jean
   Language: English
   Abstract: Background: Few studies have examined life course differences in the employment of Canadians with spinal cord injury (SCI). Objective: To compare employment participation of young/middle-aged and older adults with SCI and to examine the association between employment and demographic and health factors, SCI-related needs, and social role participation at the 2 life phases. Methods: A sample of young/middle-aged (18-54 years; n = 959) and older adults (55-64 years; n = 364) with SCI was recruited as part of a larger Canadian community survey. Pre- and postinjury employment were compared. Demographic and health factors, number of unmet SCI needs, and social role participation were collected and compared by life phase and employment status. Two multivariable logistic regression models were conducted and compared for young/middle-aged and older adults. Results: Close to one-third of participants with SCI were working post injury (32%), a decline from the 62% of respondents working prior to their injury. Participants were more likely to work in less physically demanding job sectors including business/administration or health/science/teaching. An examination of life phase differences showed that young/middle-aged adults were more likely to be employed post injury (36%) when compared to older respondents (12%) employed who were more likely to report being retired (43%). Multivariable analyses revealed that for young/middle-aged adults, being married, attaining a postsecondary education, and having fewer unmet SCI needs, and social role participation were collected and compared by life phase and employment status. Two multivariable logistic regression models were conducted and compared for young/middle-aged and older adults. Results: Close to one-third of participants with SCI were working post injury (32%), a decline from the 62% of respondents working prior to their injury. Participants were more likely to work in less physically demanding job sectors including business/administration or health/science/teaching. An examination of life phase differences showed that young/middle-aged adults were more likely to be employed post injury (36%) when compared to older respondents (12%) employed who were more likely to report being retired (43%). Multivariable analyses revealed that for young/middle-aged adults, being married, attaining a postsecondary education, and having fewer unmet SCI needs were related to employment. Among older adults, having a traumatic injury was related to involvement in paid work. For both young/middle-aged and older adults, participating in more social roles was related to working. Conclusion: A life course perspective is important to understanding similarities and differences between young/middle-aged and older adults with SCI in their employment participation. Tailored programs and policies should be designed to promote labor force involvement at different phases of the working life course.
   Publication type: journal article
   Source: CINAHL
   Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

2. Title: A systematic review of electrical stimulation for pressure ulcer prevention and treatment in people with spinal cord injuries.
   Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(703-18), 1079-0268;1079-0268 (2014 Nov)
   Author(s): Liu LQ, Moody J, Traynor M, Dyson S, Gall A
   Language: English
   Abstract: Context Electrical stimulation (ES) can confer benefit to pressure ulcer (PU) prevention and treatment in spinal cord injuries. ES elicits myoelectric activity that can improve tissue perfusion and decrease pressure. Systematic reviews and meta-analyses have suggested that ES is a safe, low-cost, and effective approach to PU prevention and treatment in individuals with spinal cord injuries. The current intervention review is the latest systematic review looking at the evidence for the use of ES for PU prevention and treatment. Nine randomized controlled trials were identified for inclusion. Analysis of these studies suggest that ES is effective for the prevention and treatment of PUs in individuals with spinal cord injury, with significant reductions in the number and depth of PUs. ES also may be associated with improvements in tissue perfusion and quality of life. This review provides further evidence that ES may be a safe, low-cost, and effective approach to PU prevention and treatment in individuals with spinal cord injury.
Objectives To critically appraise and synthesize the research evidence on ES for PU prevention and treatment in SCI. Method Review was limited to peer-reviewed studies published in English from 1970 to July 2013. Studies included randomized controlled trials (RCTs), non-RCTs, prospective cohort studies, case series, case control, and case report studies. Target population included adults with SCI. Interventions of any type of ES were accepted. Any outcome measuring effectiveness of PU prevention and treatment was included. Methodological quality was evaluated using established instruments. Results Twenty-seven studies were included, 9 of 27 studies were RCTs. Six RCTs were therapeutic trials. ES enhanced PU healing in all 11 therapeutic studies. Two types of ES modalities were identified in therapeutic studies (surface electrodes, anal probe), four types of modalities in preventive studies (surface electrodes, ES shorts, sacral anterior nerve root implant, neuromuscular ES implant). Conclusion The methodological quality of the studies was poor, in particular for prevention studies. A significant effect of ES on enhancement of PU healing is shown in limited Grade I evidence. The great variability in ES parameters, stimulating locations, and outcome measure leads to an inability to advocate any one standard approach for PU therapy or prevention. Future research is suggested to improve the design of ES devices, standardize ES parameters, and conduct more rigorous trials.

Publication type: Journal Article
Source: MEDLINE
Full text: Available The journal of spinal cord medicine at Journal of Spinal Cord Medicine, The
5. Title: An Exploratory Analysis of the Potential Association Between SCI Secondary Health Conditions and Daily Activities.

Citation: Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(277-288), 10820744
Author(s): Cobb, John, Dumont, Frédéric S., Leblond, Jean, So Eyun Park, Noonan, Vanessa K., Noreau, Luc
Language: English

Abstract: Background: Secondary health conditions (SHCs) are common following traumatic spinal cord injury (†SCI) and are believed to influence a person’s ability to participate in daily activities (DAs). This association should be understood so that health care providers may target interventions with clarity and purpose to manage SHCs and facilitate DAs to maximal effect. Objective: To explore the association between SHCs and DAs expressed as the increased chance of not participating as much as wanted in a DA when an SHC is present. Methods: Community-dwelling persons with †SCI (n = 1,137) responded to the SCI Community Survey. The occurrence and frequency of 21 SHCs were determined. The extent of participation in 26 DAs was measured. The relative risk (RR) of not participating as much as wanted in a DA when a SHC is present was calculated. Results: When some SHC were present, the RR of not participating as much as wanted increased significantly (range, 15%-153%; P< .001). Certain SHCs (light-headedness/dizziness, fatigue, weight problems, constipation, shoulder problems) were associated with a greater chance of not participating in many DAs. No single SHC was associated with every DA and conversely not every DA was associated with an SHC. Conclusions: Maximizing participation in DAs requires minimizing SHCs in every instance. Understanding the association between SHCs and DAs may facilitate targeted care resulting in less severe SHCs, greater participation in DAs, and benefits to both the individual and society.

Publication type: journal article
Source: CINAHL
Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

6. Title: Association of acute pancreatitis or high level of serum pancreatic enzymes in patients with acute spinal cord injury: a prospective study.

Citation: Spinal Cord, November 2014, vol./is. 52/11(817-20), 1362-4393;1476-5624 (2014 Nov)
Author(s): Pirolla EH, de Barros Filho TE, Godoy-Santos AL, Fregni F
Language: English

Abstract: BACKGROUND: Spinal cord injuries has increased together with urban violence and show a high rates of incidence. Besides the onus to patient and society, it can also cause other serious complications to victims. Acute pancreatitis has an important impact on this disease and has been underdiagnosed in several patients.OBJECTIVES: The aim of this study was investigate the association of acute pancreatitis in acute spinal cord injuries. The secondary aim was to propose an investigation protocol to early diagnose and prevent it.METHODS: A prospective observational study was conducted in 78 patients who presented acute spinal cord injury (SCI) at our emergency department, confirmed by clinical and imaging examination, in according to the American Spinal Injury Association (ASIA) Classification. Exclusion criteria were chronic or associate diseases in spinal cord, pancreatic direct trauma, alcoholism and chronic pancreatic disease.RESULTS: The association of acute pancreatitis in patients with SCI was 11.53%. The occurrence of pancreatitis or high levels of serum pancreatic enzymes in patients with ASIA A was 41.7% and only 4.17% in patients with ASIA E. In all, 55.2% of patients who presented pancreatitis or high levels of serum pancreatic enzymes had cervical level of SCI and 34.5% had thoracic level. Adynamic ileus was observed in 68.96% of this group.CONCLUSION: We concluded that, in acute spinal cord injuries, the occurrence of acute pancreatitis or high serum levels of pancreatic enzymes are more frequent in patients with ASIA A Classification, cervical/thoracic level of spinal injury and adynamic ileus.

Publication type: Journal Article
Source: MEDLINE
Full text: Available Nature Publishing Group at Spinal Cord

7. Title: Associations with chest illness and mortality in chronic spinal cord injury.

Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(662-9), 1079-0268;1079-0268 (2014 Nov)
Author(s): Danilack VA, Stolzmann KL, Gagnon DR, Brown R, Tun CG, Morse LR, Garshick E
Language: English

Abstract: Objective Identify factors associated with chest illness and describe the relationship between chest illness and mortality in chronic spinal cord injury (SCI). Design Cross-sectional survey assessing chest illness and a prospective assessment of mortality. Methods Between 1994 and 2005, 430 persons with chronic SCI (mean ± SD), 52.0 ± 14.9 years old, and >4 years post SCI (20.5 ± 12.5 years) underwent spirometry, completed a health questionnaire, and reported any chest illness resulting in time off work, indoors, or in bed in the preceding 3 years. Deaths through 2007 were identified. Outcome measures Logistic regression assessing relationships with chest illness at baseline and Cox regression assessing the relationship between chest illness and mortality. Results Chest illness was reported by 139 persons (32.3%). Personal characteristics associated with chest illness were current smoking (odds ratio =2.15; 95% confidence interval =1.25-3.70 per each pack per day increase), chronic obstructive pulmonary disease (COPD) (3.52; 1.79-6.92), and heart disease (2.18; 1.14-4.16). Adjusting for age, subjects reporting previous chest illness had a non-significantly increased hazard ratio (HR)
for mortality (1.30; 0.88-1.91). In a multivariable model, independent predictors of mortality were greater age, SCI level and completeness of injury, diabetes, a lower %-predicted forced expiratory volume in 1 second, heart disease, and smoking history. Adjusting for these covariates, the effect of a previous chest illness on mortality was attenuated (HR = 1.15; 0.77-1.73). Conclusion In chronic SCI, chest illness in the preceding 3 years was not an independent risk factor for mortality and was not associated with level and completeness of SCI, but was associated with current smoking, physician-diagnosed COPD, and heart disease history.

**Publication type:** Journal Article  
**Source:** MEDLINE  
**Full text:** Available *The journal of spinal cord medicine* at Journal of Spinal Cord Medicine, The

8. **Title:** Chronic bacterial prostatitis in men with spinal cord injury.  
**Citation:** World Journal of Urology, December 2014, vol./is. 32/6(1579-85), 0724-4983;1433-8726 (2014 Dec)  
**Author(s):** Krebs J, Bartel P, Pannek J  
**Language:** English  
**Abstract:** PURPOSE: Recurrent urinary tract infections (UTI) are a major problem affecting spinal cord injury (SCI) patients and may stem from chronic bacterial prostatitis. We have therefore investigated the presence of chronic bacterial prostatitis and its role in the development of recurrent symptomatic UTI in SCI men. METHODS: This study is a prospective cross-sectional investigation of bacterial prostatitis in SCI men in a single SCI rehabilitation center. In 50 men with chronic SCI presenting for a routine urologic examination, urine samples before and after prostate massage were taken for microbiologic investigation and white blood cell counting. Furthermore, patient characteristics, bladder diary details, and the annual rate of symptomatic UTI were collected retrospectively. RESULTS: No participant reported current symptoms of UTI or prostatitis. In most men (39/50, 78%), the microbiologic analysis of the post-massage urine sample revealed growth of pathogenic bacteria. The majority of these men (32/39, 82%) also presented with mostly (27/39, 69%) the same pathogenic bacteria in the pre-massage sample. There was no significant (p = 0.48) difference in the number of symptomatic UTI in men with a positive post-massage culture compared with those with a negative culture. No significant (p = 0.67) difference in the frequency distribution of positive versus negative post-massage cultures was detected between men with recurrent and sporadic UTI. CONCLUSIONS: Most SCI men are affected by asymptomatic bacterial prostatitis; however, bacterial prostatitis does not play a major role in the development of recurrent UTI. The indication for antibiotic treatment of chronic bacterial prostatitis in asymptomatic SCI men with recurrent UTI is questionable.  
**Publication type:** Journal Article  
**Source:** MEDLINE

9. **Title:** Clinical relevance of pharmacological and physiological data in intrathecal baclofen therapy  
**Citation:** Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2199-2206), 0003-9993;1532-821X (01 Nov 2014)  
**Author(s):** Heetla H.W., Staal M.J., Proost J.H., Van Laar T.  
**Language:** English  
**Abstract:** Objective To review all pharmacological and physiological data available on intrathecal baclofen (ITB) therapy and to evaluate its use in clinical practice and future research. Data Sources PubMed was searched for relevant anatomic, physiological, and pharmacological data available on ITB. Study Selection All currently available data on ITB pharmacokinetics (PKs) and pharmacodynamics (PDs) in both human and animal studies were reviewed and combined with the anatomy and physiology of the intrathecal space and cerebrospinal fluid flow. Data Extraction Only 4 studies reported PK data on ITB in humans. More studies reported PD data on ITB; however, none were combined with PK data. More detailed data on PK could be gathered from studies using an animal model. Data Synthesis ITB does not spread equally over the intrathecal space after injection, but it diffuses according to a concentration gradient. ITB distribution can be influenced by the location of the catheter tip and by changing the infusion mode. Conclusions The pharmacological and physiological data on ITB can be used to support decisions in clinical practice concerning drug concentration, infusion regimens, localization of the catheter tip, and management of tolerance; however, some strategies have little evidence in humans.  
**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

10. **Title:** Determining the most robust dimensional structure of categories from the international classification of functioning, disability and health across subgroups of persons with spinal cord injury to build the basis for future clinical measures  
**Citation:** Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2111-2119), 0003-9993;1532-
821X (01 Nov 2014)

Author(s): Ballert C.S., Stucki G., Biering-Sorensen F., Cieza A.

Language: English

Abstract: To determine the most robust dimensional structure of the International Classification of Functioning, Disability and Health (ICF) categories relevant to spinal cord injury (SCI) across subgroups of lesion level, health care context, sex, age, and resources of the country. Design A multidimensional between-item response Rasch model was used. The choice of the dimensions was conceptually driven using the ICF components from the functioning chapters and splits of the activity and participation component described in the ICF. Setting Secondary analysis of data from an international, cross-sectional, multicentric study for the Development of ICF Core Sets for Spinal Cord Injury. Participants: Persons with SCI (N=1048) from the early postacute and long-term living context from 14 middle/low- and high-resource countries. Interventions Not applicable. Main Outcome Measure: Ratings of categories of the ICF relevant for SCI were analyzed. Results: Five models were tested on the complete sample and 5 subgroups. The overall reliability of all models and reliability within dimensions of the unidimensional and 2-dimensional models were good to excellent. The ICF categories spread well along the disability scale. The model fit improvement from the unidimensional to the 2-dimensional and from the 2-dimensional to the 3-dimensional model was significant in all groups (P<.0001). The improvement, however, from a unidimensional to a 2-dimensional structure was markedly better than from a 2-dimensional to a 3-dimensional one. Conclusions: We propose that a 2-dimensional structure separating body functions and body structures from the activity and participation categories should serve as a basis for developing clinical measures in SCI in the future.

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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Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(795-8), 1079-0268;1079-0268 (2014 Nov)

Author(s): Downs J, Wolfe T, Walker H

Language: English

Abstract: Context: Case of an adult patient with paraplegia managing neurogenic bladder with intermittent catheterization who was not performing a standard bowel program for management of neurogenic bowel. Findings: Patient presented with increasing spasticity, fecal incontinence, and abdominal pain and ultimately was hospitalized for management. Imaging revealed massive fecal impaction, resulting in ureteral obstruction and hydronephrosis. Despite repeated aggressive bowel regimens, serial abdominal X-rays showed continued large stool burden. Ultimately surgical intervention was required to evacuate the colon and subsequently the hydronephrosis resolved. Conclusion: Clinical relevance: This case illustrates the importance of proper management of neurogenic bowel, as significant medical complications, such as hydronephrosis can occur with poorly managed neurogenic bowel.

Publication type: Journal Article
Source: MEDLINE
Full text: Available The journal of spinal cord medicine at Journal of Spinal Cord Medicine, The

12. Title: Dietary intake and adherence to the 2010 Dietary Guidelines for Americans among individuals with chronic spinal cord injury: A pilot study.

Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(751-7), 1079-0268;1079-0268 (2014 Nov)

Author(s): Lieberman J, Goff D Jr, Hammond F, Schreiner P, Norton HJ, Dulin M, Zhou X, Steffen L

Language: English

Abstract: Objective: To investigate dietary intake and adherence to the 2010 Dietary Guidelines for Americans in individuals with chronic spinal cord injury (SCI) and able-bodied individuals. Design: A pilot study of dietary intake among a sample of individuals with SCI >1 year ago from a single site compared with able-bodied individuals. Participants/Methods: One hundred black or white adults aged 38-55 years old with SCI >1 year and 100 age-, sex-, and race-matched adults enrolled in the Coronary Artery Risk Development in Young Adults (CARDIA) study. Dietary intake was assessed by the CARDIA dietary history. Linear regression analysis was used to compare dietary intake between the subjects with SCI and those enrolled in the CARDIA study. Further, adherence to the 2010 Dietary Guidelines for dairy, fruits, and vegetables, and whole-grain foods was assessed. Results: Compared with CARDIA participants, participants with SCI consumed fewer daily servings of dairy (2.10 vs. 5.0, P < 0.001), fruit (2.01 vs. 3.64, P = 0.002), and whole grain foods (1.20 vs. 2.44 P = 0.007). For each food group, fewer participants with SCI met the recommended servings compared with the CARDIA participants. Specifically, the participants with SCI and in CARDIA who met the guidelines were, respectively: dairy, 22% vs. 54% (P < 0.001), fruits and vegetables 39% vs. 70% (P = 0.001), and whole-grain foods 8% vs. 69.6% (P = 0.001). Conclusions: Compared with able-bodied individuals, SCI participants consumed fewer daily servings of fruit, dairy, and
whole grain foods than proposed by the 2010 Dietary Guideline recommendations. Nutrition education for this population may be warranted.

**Publication type:** Journal Article  
**Source:** MEDLINE  
**Full text:** Available The journal of spinal cord medicine at Journal of Spinal Cord Medicine, The

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**13.** Title: Efficacy of addition of Transcutaneous electrical nerve stimulation to standardized physical therapy in subacute spinal spasticity: A randomized controlled trial  
**Citation:** Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2013-2020), 0003-9993;1532-821X (01 Nov 2014)  
**Author(s):** Oo W.M.  
**Language:** English  
**Abstract:** Objective To study the immediate and short-term efficacy of adding transcutaneous electrical nerve stimulation (TENS) to standardized physical therapy on subacute spasticity within 6 months of spinal cord injury. Design Randomized controlled trial for 3 weeks. Setting A university hospital. Participants Subjects (N=16) with clinically determined spasticity were randomly assigned to either the experimental group (n=8) or the control group (n=8). Intervention Sixty-minute sessions of TENS over the bilateral common peroneal nerves before 30 minutes of physical therapy for the experimental group and 30 minutes of physical therapy alone for the control group. All patients in both groups had access to standardized rehabilitation care. Main Outcome Measures The composite spasticity score, which included 3 subscores (ankle jerk, muscle tone, and ankle clonus scores), was used as the primary end point to assess plantar flexor spasticity. These subscores were designated as secondary end points. Serial evaluations were made at baseline before study entry and immediately after the first and last sessions in both groups. Results On analysis for immediate effects, there was a significant reduction only in the composite spasticity score (mean difference, 1.75; 99% confidence interval [CI], 0.47-3.03; P=.002) in the experimental group, but no significant reduction was observed in all outcome variables in the control group. A significant difference in the composite spasticity score (1.63; 99% CI, 0.14-3.11; P=.006) was observed between the 2 groups. After 15 sessions of treatment, a significant reduction was determined in the composite spasticity score (2.75; 99% CI, 1.31-4.19; P<.001), the muscle tone score (1.75; 99% CI, 0.16-3.34; P=.006), and the ankle clonus score (0.75; 99% CI, 0.18-1.32; P=.003) in the experimental group, whereas none of the outcome variables revealed a significant reduction in the control group. The between-group difference was significant only for the composite spasticity score (2.13; 99% CI, 0.59-3.66; P=.001) and the muscle tone score (1.50; 99% CI, 0.15-2.85; P=.005) after 15 intervention sessions. Conclusion Addition of TENS to standardized physical therapy had synergistically antispastic action, providing more effective reduction of clinical spasticity.

**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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**14.** Title: Employment trajectories after spinal cord injury: Results from a 5-year prospective cohort study  
**Citation:** Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2040-2046), 0003-9993;1532-821X (01 Nov 2014)  
**Author(s):** Ferdiana A., Post M.W., Hoekstra T., Van Der Woude L.H., Van Der Klink J.J., Bultmann U.  
**Language:** English  
**Abstract:** Objectives To identify different employment trajectories in individuals with spinal cord injury (SCI) after discharge from initial rehabilitation and to determine predictors of different trajectories from demographic, injury, functional, and psychological characteristics. Design Prospective cohort study with baseline measurement at the start of active rehabilitation, a measurement at discharge, and follow-up measurements at 1, 2, and 5 years after discharge. Setting Eight rehabilitation centers with SCI units in The Netherlands. Participants People with acute SCI (N=176), aged between 18 and 60 years at baseline, who completed at least 2 follow-up measurements. Interventions Not applicable. Main Outcome Measure Employment was defined as having paid work for >12h/wk. Results Using latent class growth mixture modeling, 3 distinct employment trajectories were identified: (1) no employment group (22.2%), that is, participants without employment pre-SCI and during 5-year follow-up; (2) low employment group (56.3%), that is, participants with pre-SCI employment and a low, slightly increasing probability of employment during 5-year follow-up; and (3) steady employment group (21.6%), that is, participants with continuous employment pre-SCI and within 5-year follow-up. Predictors of steady employment versus low employment were having secondary education (odds ratio, 4.32; 95% confidence interval, 1.69-11.02) and a higher FIM motor score (odds ratio, 1.04; 95% confidence interval, 1.01-1.06) at discharge. Conclusions Distinct employment trajectories after SCI were identified. More than half of the individuals with SCI had a low employment trajectory, and only one-fifth of the individuals with SCI had a steady employment trajectory. Secondary education and higher functional independence level predicted steady employment.
15. Title: Factors Associated with Pressure Ulcer Risk in Spinal Cord Injury Rehabilitation.

Citation: American Journal of Physical Medicine & Rehabilitation, 01 November 2014, vol./is. 93/11(971-986), 08949115

Author(s): DeJong, Gerben, Ching-Hui J. Hsieh, Brown, Patrick, Smout, Randall J., Horn, Susan D., Ballard, Pamela, Bouchard, Tara

Language: English

Abstract: Objective: The aim of this study was to identify patient and clinical factors most strongly associated with a spinal cord injury patient’s risk for developing a pressure ulcer (PU) during rehabilitation. Design: This is a prospective observational cohort study conducted at an urban rehabilitation hospital-based specialized spinal cord injury center. The main outcome measure was the onset of a stage 2 or higher PU. Results: Study patients (N = 159) with new (n = 66) and patients with earlier (n = 99) spinal injuries had identical rates at which they acquired a new PU (stage ≥ 2) in rehabilitation—13.1%. The patients who came to rehabilitation with a PU or myocutaneous flap exhibited a higher rate of developing yet another PU while in rehabilitation (30.2%) than those who came to rehabilitation without an existing PU or flap (6.9%). Logistic regression analysis identified two variables that best predicted a patient’s risk at admission for developing a PU during rehabilitation (c = 0.77)—entering rehabilitation with a PU and admission Functional Independence Measure transfers score of less than 3.5. Conclusions: The greatest risk of developing a new PU in rehabilitation is being admitted with an existing PU followed by admission Functional Independence Measure transfers score of less than 3.5. Using these two variables, one can develop a patient PU risk algorithm at admission that can alert clinicians for the need to enhance vigilance, skin monitoring, and early patient education.

Publication type: journal article

Source: CINAHL

Full text: Available American journal of physical medicine & rehabilitation / Association of Academic Physiatrists at American Journal of Physical Medicine and Rehabilitation

16. Title: Function of microglia and macrophages in secondary damage after spinal cord injury

Citation: Neural Regeneration Research, 2014, vol./is. 9/20(1787-1795), 1673-5374;1876-7958 (2014)

Author(s): Zhou X., He X.J., Ren Y.

Language: English

Abstract: Spinal cord injury (SCI) is a devastating type of neurological trauma with limited therapeutic opportunities. The pathophysiology of SCI involves primary and secondary mechanisms of injury. Among all the secondary injury mechanisms, the inflammatory response is the major contributor and results in expansion of the lesion and further loss of neurologic function. Meanwhile, the inflammation directly and indirectly dominates the outcomes of SCI, including not only pain and motor dysfunction, but also preventing neuronal regeneration. Microglia and macrophages play very important roles in secondary injury. Microglia reside in spinal parenchyma and survey the microenvironment through the signals of injury or infection. Macrophages are derived from monocytes recruited to injured sites from the peripheral circulation. Activated resident microglia and monocyte-derived macrophages induce and magnify immune and inflammatory responses not only by means of their secretory molecules and phagocytosis, but also through their influence on astrocytes, oligodendrocytes and demyelination. In this review, we focus on the roles of microglia and macrophages in secondary injury and how they contribute to the sequelae of SCI.

Publication type: Journal: Review

Source: EMBASE

Full text: Available ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION at Salisbury District Hospital Healthcare Library

17. Title: Gabapentinoids are effective in decreasing neuropathic pain and other secondary outcomes after spinal cord injury: A meta-analysis

Citation: Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2180-2186), 0003-9993;1532-821X (01 Nov 2014)

Author(s): Mehta S., McIntyre A., Dijkers M., Loh E., Teasell R.W.

Language: English

Abstract: Objective To examine the effectiveness of gabapentin and pregabalin in diminishing neuropathic pain and other secondary conditions in individuals with spinal cord injury (SCI). Data Sources A systematic search was conducted using multiple databases for relevant articles published from 1980 to June 2013. Study Selection Controlled and uncontrolled trials involving gabapentin and pregabalin for treatment of neuropathic pain, with >3 subjects and >50% of study population with SCI, were included. Data Extraction Two independent reviewers selected studies based on inclusion criteria and then extracted data. Pooled analysis using Cohen’s d to calculate standardized mean difference (SMD), SE, and
95% confidence interval (CI) for primary (pain) and secondary outcomes (anxiety, depression, sleep interference) was conducted. Data Synthesis Eight studies met inclusion criteria. There was a significant reduction in the intensity of neuropathic pain at <3 months (SMD=−0.6+0.11; 95% CI, −0.74−1.19; P<0.001) and between 3 and 6 months (SMD=2.80+0.18; 95% CI, 2.44−3.16; P<0.001). A subanalysis found a significant decrease in pain with gabapentin (SMD=1.20+0.16; 95% CI, 0.88−1.52; P<0.001) and with pregabalin (SMD=1.71+0.13; 95% CI, 1.458−1.965; P<0.001). A significant reduction in other SCI secondary conditions, including sleep interference (SMD=1.46+0.12; 95% CI, 1.22−1.71; P<0.001), anxiety (SMD=0.15+0.12; 95% CI, 0.81−1.29; P<0.001), and depression (SMD=1.22+0.13; 95% CI, 0.967−1.481; P<0.001) symptoms, was shown. A significantly higher risk of dizziness (risk ratio [RR]=2.02, P=0.02), edema (RR=6.140, P=.04), and somnolence (RR=1.75, P=0.01) was observed. Conclusions: Gabapentin and pregabalin appear useful for treating pain and other secondary conditions after SCI. Effectiveness comparative to other analgesics has not been studied. Patients need to be monitored closely for side effects.

**Publication type:** Journal: Review

**Source:** EMBASE

**Full text:** Available [ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION](https://www.ncbi.nlm.nih.gov/pubmed/28369787) at Archives of Physical Medicine and Rehabilitation

**Full text:** Available [ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION](https://www.ncbi.nlm.nih.gov/pubmed/28369787) at Salisbury District Hospital Healthcare Library

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18.Title: Health Care Provider Practices, Barriers, and Facilitators for Weight Management for Individuals with Spinal Cord Injuries and Disorders.

**Citation:** Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(329-337), 10820744

**Author(s):** Locatelli, Sara M., Gerber, Ben S., Goldstein, Barry, Weaver, Frances M., LaVela, Sherri L.

**Language:** English

**Abstract:** Background: Even though weight management is essential for the health of individuals with spinal cord injuries and disorders (SCI/D), little is known about current practices, barriers, and facilitators. Objective: To describe weight management delivery in the Veterans Affairs (VA) SCI/D System of Care, including barriers and facilitators experienced by health care providers. Methods: Qualitative focus groups were conducted in person at 4 geographically dispersed VA medical facilities delivering care to Veterans with SCI/D. Thirty-two employees involved in weight management efforts participated. Audio-recordings were transcribed and analyzed using qualitative content analysis techniques. Results: Participants at SCI centers reported that weight management treatment was delivered through the center by a multidisciplinary team using education (eg, written materials) and counseling/consults. Participants at SCI spoke facilities generally depended on facility-level programs (eg, MOVE!) to deliver treatment. Spoke facilities discussed barriers to delivering treatment through their SCI team, including staff shortages and resource and structural issues. MOVE! staff discussed barriers, including limited wheelchair space in classrooms. Staff participants across facilities noted that Veterans with SCI/D were hesitant to use facility-level programs, because of nonspecific SCI-relevant information and discomfort attending sessions with general Veterans. Other barriers, for both centers and spoke facilities, included necessary medications that increase weight, lack of evidence-based guidelines for weight management, safety concerns, and facility layout/accessibility. Facilitators included facility leadership support, provider involvement/prioritization, and community resources. Conclusions: Weight management programs delivered through the SCI team, with peers and SCI-relevant content, are likely more acceptable and beneficial to individuals with SCI/D. Program classrooms should provide ample space for individuals with SCI/D.

**Publication type:** journal article

**Source:** CINAHL

**Full text:** Available [Topics in Spinal Cord Injury Rehabilitation](https://www.ncbi.nlm.nih.gov/pubmed/28369787) at Topics in Spinal Cord Injury Rehabilitation

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**Citation:** Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(289-301), 10820744

**Author(s):** Noonan, Vanessa K., Fallah, Nader, Park, So Eyun, Dumont, Frédéric S., Leblond, Jean, Cobb, John, Noreau, Luc

**Language:** English

**Abstract:** Background: Persons with spinal cord injury (SCI) living in the community have high health care utilization (HCU). To date, the interrelationships among multiple secondary health conditions (multimorbidity due to comorbidities and complications) that drive HCU and their impact on patient outcomes are unknown. Objective: To determine the association among multimorbidity, HCU, health status, and quality of life. Methods: Community-dwelling persons with traumatic SCI participated in an online/phone SCI Community Survey. Participants were grouped using the 7-item HCU questionnaire (group 1 did not receive needed care and/or rehospitalized; group 2 received needed care but rehospitalized; group 3 received needed care and not rehospitalized). Personal, injury, and environmental factors; multimorbidity (presence/absence of 30 comorbidities/ complications); health status (Short Form-12); and quality of life measures (Life Satisfaction-11 first question and single-item quality of life measure) were collected. Associations among these variables were assessed using multivariate analysis. Results: The 1,137 survey participants were divided into 3 groups: group 1 (n = 292), group 2 (n = 194), and group 3 (n = 650). Group 1 had the greatest number of secondary health conditions, are likely more acceptable and beneficial to individuals with SCI/D. Program classrooms should provide ample space for individuals with SCI/D.
conditions (15.14 ± 3.86) followed by group 2 (13.60 ± 4.00) and group 3 (12.00 ± 4.16) (P < .05). Multimorbidity and HCU were significant risk factors for having a lower SF-12 Mental (P < .001) and Physical Component Score (P < .001). They in turn were associated with participants reporting a lower quality of life (P < .001, for both questions). Conclusions: Multimorbidity and HCU are interrelated and associated with lower health status, which in turn is associated with lower quality of life. Future work will include the development of a screening tool to identify persons with SCI at risk of inappropriate HCU (eg, rehospitalization, not able to access care), which should lead to better patient outcomes and cost savings.

**Publication type:** journal article

**Source:** CINAHL

**Full text:** Available *Topics in Spinal Cord Injury Rehabilitation* at Topics in Spinal Cord Injury Rehabilitation

20. **Title:** How well do randomised controlled trials of physical interventions for people with spinal cord injury adhere to the CONSORT guidelines? An analysis of trials published over a 10-year period.

**Citation:** Spinal Cord, November 2014, vol./is. 52/11(795-802), 1362-4393;1476-5624 (2014 Nov)

**Author(s):** Harvey LA, Glinsky JV, Bowden JL, Arora M

**Language:** English

**Abstract:** STUDY DESIGN: Cross-sectional descriptive study of randomised controlled trials involving physical interventions for people with spinal cord injury (SCI) published between 2003 and 2013.OBJECTIVES: To determine how well randomised controlled trials of physical interventions for people with SCI adhere to the CONSORT (Consolidated Standards of Reporting Trials) guidelines.SETTING: University of Sydney, Sydney, NSW, Australia.METHODS: A search was conducted for randomised controlled trials designed to determine the effectiveness of physical interventions for people with SCI published between 2003 and 2013. The CONSORT checklist for the reporting of randomised controlled trials was used to determine how well each trial adhered to the guidelines. Two independent reviewers rated each trial on each of the 37 items on the CONSORT checklist using the following criteria: 'fully reported', 'partially reported', 'not reported', 'not relevant' or 'not reported but unable to determine if relevant/done'.RESULTS: Fifty-three trials were retrieved. None of the trials 'fully reported' all items of the CONSORT guidelines. The median (IQR) number of items that was 'fully reported' was 11/37 (7-20). The median (IQR) number of items that was either 'fully reported' or 'not relevant' or 'not reported but unable to determine if relevant' was 20/37 items (17-27).CONCLUSION: The reporting of randomised controlled trials in SCI is only partially adhering to the CONSORT guidelines. Journals can help lift standards by encouraging authors of randomised controlled trials to adhere to the CONSORT guidelines.

**Publication type:** Journal Article

**Source:** MEDLINE

**Full text:** Available *Nature Publishing Group* at Spinal Cord

21. **Title:** Hybrid functional electrical stimulation exercise training alters the relationship between spinal cord injury level and aerobic capacity

**Citation:** Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2172-2179), 0003-9993;1532-821X (01 Nov 2014)

**Author(s):** Taylor J.A., Picard G., Porter A., Morse L.R., Pronovost M.F., Deley G.

**Language:** English

**Abstract:** Objective To test the hypothesis that hybrid functional electrical stimulation (FES) row training would improve aerobic capacity but that it would remain strongly linked to level of spinal cord lesion because of limited maximal ventilation. Design Longitudinal before-after trial of 6 months of FES row training. Setting Exercise for persons with disabilities program in a hospital. Participantsn Volunteers (N=14; age range, 21-63y) with complete spinal cord injury (SCI) (T3-11) who are >2 years postinjury. Intervention Six months of FES row training preceded by a variable period of FES strength training. Main Outcome Measures Peak aerobic capacity and peak exercise ventilation before and after 6 months of FES row training. Results FES row training significantly increased peak aerobic capacity and peak minute ventilation (both P<.05). Prior to FES row training, there was a close relation between level of SCI and peak aerobic capacity (adjusted R<sup>2</sup>=.40, P=.009) that was markedly reduced after FES row training (adjusted R<sup>2</sup>=.15, P=.10). In contrast, the relation between level of injury and peak minute ventilation was comparable before and after FES row training (adjusted R<sup>2</sup>=.38 vs.32, both P<.05). Conclusions The increased aerobic capacity reflects more than increased ventilation; FES row training effectively circumvents the effect of SCI on peak aerobic capacity by engaging more muscle mass for training, independent of the level of injury.

**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
22. **Title:** Impact of vasculature damage on the outcome of spinal cord injury: A novel collagenase-induced model may give new insights into the mechanisms involved  
**Citation:** Neural Regeneration Research, 2014, vol./is. 9/20(1783-1786), 1673-5374;1876-7958 (2014)  
**Author(s):** Losey P., Anthony D.C.  
**Language:** English  
**Abstract:** The deleterious effect of vasculature damage on the outcome of spinal cord injury has long been recognized, and numerous clinical studies have shown that the presence of hemorrhage into the spinal cord is directly associated with a poorer neurological outcome. Vascular damage leads to decreased blood flow to the cord and the release of potentially toxic blood-borne components. Here we consider the mechanisms that may be contributing to hemorrhage-induced damage and discuss the utility of a new model of spinal cord hemorrhage, which was urgently required as most of our current understanding has been extrapolated from intracerebral hemorrhage studies.  
**Publication type:** Journal: Review  
**Source:** EMBASE  
**Full text:** Available Nature Publishing Group at Spinal Cord

23. **Title:** Intermittent catheterization in patients with traumatic spinal cord injury: obstacles, worries, level of satisfaction.  
**Citation:** Spinal Cord, November 2014, vol./is. 52/11(826-30), 1362-4393;1476-5624 (2014 Nov)  
**Language:** English  
**Abstract:** OBJECTIVES: The aim of this study is to examine the obstacles in people with traumatic spinal cord injury (SCI) facing performance intermittent catheterization (IC), also their worries and level of satisfaction.METHODS: Two hundred sixty-nine patients performing IC for at least 3 months were asked to fill-out a questionnaire about their opinions on IC.RESULTS: In total, 69.5% of patients performed IC themselves, 10.4% had performed by their mothers, 7.8% by another caregiver and 7.4% by their spouse. For the 72 (26%) patients unable to apply IC, reasons were insufficient hand function (56.1%), being unable to sit appropriately (35.4%) and spasticity (8.5%). In all, 70% of male patients had insufficient hand function, 20% could not sit and 10% had spasticity while 56.3% of female patients could not sit, 37.5% had insufficient hand function and 63% had spasticity. Difference between sexes was found to be statistically significant (P<0.05). Worries patients had when starting IC were fear of being dependent on IC (50.2%), accidentally injuring self (43.8%), embarrassment (43.2%), causing an infection (40.2%), bleeding (32.7%), fear of feeling pain (30.2%) and hygiene (24.7%). More women felt embarrassment; other items were similar in both sexes. In all, 46.9% of patients had urinary incontinence in intervals.CONCLUSION: In total, 69.5% of patients performed IC themselves. Men's most common obstacle was insufficient hand function while women's was being unable to sit appropriately. Patients' most common worries were being dependent on IC for life. In all, 46.9% had incontinence in intervals; 47.9% said IC improved their life quality; and 97.4% preferred IC over continuous catheterization.  
**Publication type:** Journal Article  
**Source:** MEDLINE  
**Full text:** Available Nature Publishing Group at Spinal Cord

24. **Title:** Locomotor training alters the behavior of flexor reflexes during walking in human spinal cord injury  
**Citation:** Journal of Neurophysiology, November 2014, vol./is. 112/9(2164-2175), 0022-3077;1522-1598 (01 Nov 2014)  
**Author(s):** Smith A.C., Mummidisetty C.K., Rymer W.Z., Knikou M.  
**Language:** English  
**Abstract:** In humans, a chronic spinal cord injury (SCI) impairs the excitability of pathways mediating early flexor reflexes and increases the excitability of late, long-lasting flexor reflexes. We hypothesized that in individuals with SCI, locomotor training will alter the behavior of these spinally mediated reflexes. Nine individuals who had either chronic clinically motor complete or incomplete SCI received an average of 44 locomotor training sessions. Flexor reflexes, elicited via sural nerve stimulation of the right or left leg, were recorded from the ipsilateral tibialis anterior (TA) muscle before and after body weight support (BWS)-assisted treadmill training. The modulation pattern of the ipsilateral TA responses following innocuous stimulation of the right foot was also recorded in 10 healthy subjects while they stepped at 25% BWS to investigate whether body unloading during walking affects the behavior of these responses. Healthy subjects did not receive treadmill training. We observed a phase-dependent modulation of early TA flexor reflexes in healthy subjects with reduced body weight during walking. The early TA flexor reflexes were increased at heel contact, progressively decreased during the stance phase, and then increased throughout the swing phase. In individuals with SCI, locomotor training induced the reappearance of early TA flexor reflexes and changed the amplitude of late TA flexor reflexes during walking. Both early and late TA flexor reflexes were modulated in a phase-dependent pattern after training. These new findings support the adaptive capability of the injured nervous system to return to a pre lesion excitability and integration state.  
**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available Highwire Press at Journal of Neurophysiology
25. Title: Longitudinal analysis of hospitalization after spinal cord injury: Variation based on race and ethnicity

Citation: Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2158-2166), 0003-9993;1532-821X (01 Nov 2014)

Author(s): Mahmoudi E., Meade M.A., Forchheimer M.B., Fyffe D.C., Krause J.S., Tate D.

Language: English

Abstract: Objective To examine the longitudinal effects of race/ethnicity on hospitalization among adults with spinal cord injury (SCI) in the 10-year period after initial injury. Design Retrospective analysis of postinjury hospitalizations among non-Hispanic white, non-Hispanic African American, and Hispanic adults with SCI. Setting Community. Data were extracted from the 2011 National Spinal Cord Injury Model Systems database. Participants Patients with traumatic SCI (N= 5146; white, 3175; African American, 1396; Hispanic, 575) who received rehabilitation at one of the relevant SCI Model Systems. Interventions Not applicable. Main Outcome Measures Hospitalization, including rate of hospitalization, number of hospitalizations, and number of days hospitalized during the 12 months before the first-, fifth-, and tenth-year follow-up interviews for the SCI Model Systems. Results Significant differences were found in rates of hospitalization at 1 and 5 years postinjury, with participants from Hispanic backgrounds reporting lower rates than either whites or African Americans. At 10 years postinjury, no differences were noted in the rate of hospitalization between racial/ethnic groups; however, compared with whites (P=.011) and Hispanics (P=.051), African Americans with SCI had 13 and 16 more days of hospitalization, respectively. Compared with the first year postinjury, the rate of hospitalization declined over time among whites, African Americans, and Hispanics; however, for African Americans, the number of days hospitalized increased by 12 days (P=.036) at 10 years versus 5 years postinjury. Conclusions Racial/ethnic variation appears to exist in postinjury hospitalization for individuals with SCI, with Hispanics showing the lowest rates of hospitalization at 1 and 5 years postinjury and African Americans having a significantly higher number of days hospitalized at 10 years postinjury. Potential explanations for these variations are discussed, and recommendations are made for potential changes to policy and clinical care.

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

26. Title: Metabolic rate and cardiorespiratory response during hybrid cycling versus handcycling at equal subjective exercise intensity levels in people with spinal cord injury.

Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(758-64), 1079-0268;1079-0268 (2014 Nov)

Author(s): Bakkum AJ, de Groot S, Onderwater MQ, de Jong J, Janssen TW

Language: English

Abstract: Objective To compare the metabolic rate and cardiorespiratory response during hybrid cycling versus handcycling at equal subjective exercise intensity levels in people with spinal cord injury (SCI). Design Cross-sectional study. Setting Amsterdam Rehabilitation Research Centre Reade, Amsterdam, The Netherlands. Methods On separate days, nine individuals with a motor complete paraplegia or tetraplegia (eight men, age 40 + 13 years, time since injury 12 + 10 years) performed 5-minute bouts of hybrid cycling (day 1) and handcycling (day 2) at moderate (level 3 on a 10-point rating of perceived exertion (RPE) scale) and vigorous (RPE level 6) subjective exercise intensity, while respiratory gas exchange was measured by open-circuit spirometry and heart rate was monitored using radiotelemetry. Outcome measures Metabolic rate (calculated with the Weir equation) and cardiorespiratory response (heart rate, oxygen pulse, and ventilation). Results Overall, the metabolic rate during hybrid cycling was 3.4 kJ (16%) higher (P = 0.006) than during handcycling. Furthermore, compared with handcycling, the overall heart rate and ventilation during hybrid cycling was 11 bpm (11%) and 5.3 l/minute (18%) higher (P = 0.004 and 0.024), respectively, while the oxygen pulse was the same (P = 0.26). Conclusion Hybrid cycling induces a higher metabolic rate and cardiorespiratory response at equal RPE levels than handcycling, suggesting that hybrid cycling is more suitable for fighting obesity and increasing cardiorespiratory fitness in individuals with SCI.

Publication type: Journal Article

Source: MEDLINE

Full text: Available The journal of spinal cord medicine at Journal of Spinal Cord Medicine, The

27. Title: Metaplasticity and behavior: How training and inflammation affect plastic potential within the spinal cord and recovery after injury

Citation: Frontiers in Neural Circuits, September 2014, vol./is. 8/SEP, 1662-5110 (08 Sep 2014)


Language: English
Abstract: Research has shown that spinal circuits have the capacity to adapt in response to training, nociceptive stimulation and peripheral inflammation. These changes in neural function are mediated by physiological and neurochemical systems analogous to those that support plasticity within the hippocampus (e.g., long-term potentiation and the NMDA receptor). As observed in the hippocampus, engaging spinal circuits can have a lasting impact on plastic potential, enabling or inhibiting the capacity to learn. These effects are related to the concept of metaplasticity. Behavioral paradigms are described that induce metaplastic effects within the spinal cord. Uncontrollable/unpredictable stimulation, and peripheral inflammation, induce a form of maladaptive plasticity that inhibits spinal learning. Conversely, exposure to controllable or predictable stimulation engages a form of adaptive plasticity that counters these maladaptive effects and enables learning. Adaptive plasticity is tied to an up-regulation of brain derived neurotrophic factor (BDNF). Maladaptive plasticity is linked to processes that involve kappa opioids, the metabotropic glutamate (mGlu) receptor, glia, and the cytokine tumor necrosis factor (TNF). Uncontrollable nociceptive stimulation also impairs recovery after a spinal contusion injury and fosters the development of pain (allodynia). These adverse effects are related to an up-regulation of TNF and a down-regulation of BDNF and its receptor (TrkB). In the absence of injury, brain systems quell the sensitization of spinal circuits through descending serotonergic fibers and the serotonin 1A (5HT 1A) receptor. This protective effect is blocked by surgical anesthesia. Disconnected from the brain, intracellular Cl- concentrations increase (due to a down-regulation of the cotransporter KCC2), which causes GABA to have an excitatory effect. It is suggested that BDNF has a restorative effect because it up-regulates KCC2 and re-establishes GABA-mediated inhibition.

Publication type: Journal: Review
Source: EMBASE
Full text: Available Frontiers in Neural Circuits at Frontiers in Neural Circuits

Citation: Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(338-345), 10820744
Author(s): Heyn, Patricia C., Baumgardner, Chad A., McLachlan, Leslie, Bodine, Cathy
Language: English
Abstract: Objective: The purpose of this pilot study was to investigate the effectiveness of a mixed-reality (MR) exercise environment on engagement and enjoyment levels of individuals with spinal cord injury (SCI) and intellectual and developmental disabilities (IDD). Methods: Six people participated in this cross-sectional, observational pilot study involving one MR exercise trial. The augmented reality environment was based on a first-person perspective video of a scenic biking/walking trail in Colorado. Males and females (mean age, 43.3 ± 13.7 years) were recruited from a research database for their participation in previous clinical studies. Of the 6 participants, 2 had SCI, 2 had IDD, and 2 were without disability. The primary outcome measurement of this pilot study was the self-reported engagement and enjoyment level of each participant after the exercise trial. Results: All participants reported increased levels of engagement, enjoyment, and immersion involving the MR exercise environment as well as positive feedback recommending this type of exercise approach to peers with similar disabilities. All the participants reported higher than normal levels of enjoyment and 66.7% reported higher than normal levels of being on a real trail. Conclusion: Participants' feedback suggested that the MR environment could be entertaining, motivating, and engaging for users with disabilities, resulting in a foundation for further development of this technology for use in individuals with cognitive and physical disabilities.
Publication type: journal article
Source: CINAHL
Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

29. Title: Physical exercise improves arterial stiffness after spinal cord injury.
Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(782-5), 1079-0268;1079-0268 (2014 Nov)
Author(s): Hubli M, Currie KD, West CR, Gee CM, Krassioukov AV
Language: English
Abstract: Objective/background Aortic pulse wave velocity (PWV), the gold-standard assessment of central arterial stiffness, has prognostic value for cardiovascular disease risk in able-bodied individuals. The aim of this study was to compare aortic PWV in athletes and non-athletes with spinal cord injury (SCI). Design Cross-sectional comparison. Methods Aortic PWV was assessed in 20 individuals with motor-complete, chronic SCI (C2-T5; 18 ± 8 years post-injury) using applanation tonometry at the carotid and femoral arterial sites. Ten elite hand-cyclists were matched for sex to 10 non-athletes; age and time since injury were comparable between the groups. Heart rate and discrete brachial blood pressure measurements were collected throughout testing. Outcome measures Aortic PWV, blood pressure, heart rate. Results Aortic PWV was significantly lower in athletes vs. non-athletes (6.9 ± 1.0 vs. 8.7 ± 2.5 m/sec, P = 0.044). There were no significant between-group differences in resting supine mean arterial blood pressure (91 ± 19 vs. 81 ± 10 mmHg) and heart rate (60 ± 10 vs. 58 ± 6 b.p.m.). Conclusion Athletes with SCI exhibited improved central arterial stiffness compared to non-athletes, which is in agreement with the previous able-bodied literature. This finding implies that chronic exercise training may improve arterial health and potentially lower cardiovascular disease risk in the SCI population.
30. Title: Recovery of the pulmonary chemoreflex and functional role of bronchopulmonary C-fibers following chronic cervical spinal cord injury.

Citation: Journal of Applied Physiology, November 2014, vol./is. 117/10(1188-98), 0161-7567;1522-1601 (2014 Nov 15)

Author(s): Lee KZ, Chang YS

Abstract: Persistent impairment of pulmonary defense reflexes is a critical factor contributing to pulmonary complications in patients with spinal cord injuries. The pulmonary chemoreflex evoked by activation of bronchopulmonary C-fibers has been reported to be abolished in animals with acute cervical hemisection (C2Hx). The present study examined whether the pulmonary chemoreflex can recover during the chronic injury phase and investigated the role of bronchopulmonary C-fibers on the altered breathing pattern after C2Hx. In the first protocol, bronchopulmonary C-fibers were excited by intrajugular capsaicin administration in uninjured and complete C2Hx animals 8 wk postsurgery. Capsaicin evoked pulmonary chemoreflexes in both groups, but the reflex intensity was significantly weaker in C2Hx animals. To examine whether spared spinal white matter tissue contributes to pulmonary chemoreflex recovery, the reflex was evaluated in animals with different extents of lateral injury. Linear regression analyses revealed that tidal volume significantly correlated with the extent of spared tissue; however, capsaicin-induced apnea was not related to injury severity when the ipsilateral-to-contralateral white matter ratio was <50%. In the second protocol, the influence of background bronchopulmonary C-fiber activity on respiration was investigated by blocking C-fiber conduction via perivagal capsaicin treatment. The rapid shallow breathing of C2Hx animals persisted after perivagal capsaicin treatment despite attenuation of pulmonary chemoreflexes. These results indicate that the pulmonary chemoreflex can recover to some extent following spinal injury, but remains attenuated even when there is moderate spinal tissue sparing, and that altered breathing pattern of C2Hx animals cannot be attributed to endogenous activation of bronchopulmonary C-fibers. Copyright 2014 the American Physiological Society.

31. Title: Respiratory motor function in seated and supine positions in individuals with chronic spinal cord injury

Citation: Respiratory Physiology and Neurobiology, November 2014, vol./is. 203/1(9-14), 1569-9048;1878-1519 (November 01, 2014)

Author(s): Terson de Paleville D.G.L., Sayenko D.G., Aslan S.C., Folz R.J., McKay W.B., Ovechkin A.V.

Abstract: This case-controlled clinical study was undertaken to investigate to what extent pulmonary function in individuals with chronic spinal cord injury (SCI) is affected by posture. Forced vital capacity (FVC), forced expiratory volume in one second (FEV<sub>1</sub>), maximal inspiratory pressure (PI<sub>max</sub>) and maximal expiratory pressure (PE<sub>max</sub>) were obtained from 27 individuals with chronic motor-complete (n=13, complete group) and motor-incomplete (n=14, incomplete group) SCI in both seated and supine positions. Seated-to-supine changes in spirometrical (FVC and FEV<sub>1</sub>) and airway pressure (PI<sub>max</sub> and PE<sub>max</sub>) outcome measures had different dynamics when compared in complete and incomplete groups. Patients with motor-complete SCI had tendency to increase spirometrical outcomes in supine position showing significant increase in FVC (p=007), whereas patients in incomplete group exhibited decrease in these values with significant decreases in FEV<sub>1</sub> (p=002). At the same time, the airway pressure values were decreased in supine position in both groups with significant decrease in PE<sub>max</sub> (p=031) in complete group and significant decrease in PI<sub>max</sub> (p=042) in incomplete group. In addition, seated-to-supine percent change of PI<sub>max</sub> was strongly correlated with neurological level of motor-complete SCI (r=-77, p=002). These results indicate that postural effects on respiratory performance in patients with SCI can depend on severity and neurological level of SCI, and that these effects differ depending on respiratory tasks. Further studies with adequate sample size are needed to investigate these effects in clinically specific groups and to study the mechanisms of such effects on specific respiratory outcome measures.

32. Title: Role of local application of autologous platelet-rich plasma in the management of pressure ulcers in spinal cord injury patients.

Citation: Spinal Cord, November 2014, vol./is. 52/11(809-16), 1362-4393;1476-5624 (2014 Nov)

Author(s): Singh R, Rohilla RK, Dhayal RK, Sen R, Sehgal PK

Language: English
Abstract: STUDY DESIGN: Prospective clinical case series. OBJECTIVES: The objective of this study is to evaluate the local application of platelet-rich plasma (PRP) in relation to pressure ulcers (PrUs) healing on one PrU (case) versus saline dressing on another PrU (control) in the same patient. SETTING: Tertiary Level Care Centre, India. METHODS: Twenty-five spinal cord injury patients with at least two PrUs were included. All 25 PrUs (case) were grade IV, and PrUs (control) were grade II (n=11), grade IV (n=10) and grade III in 4 patients. Evaluation of PrU healing was done by measuring wound surface area, Pressure Ulcer Scale for Healing (PUSH), biopsy and clinical examination. RESULTS: Statistically significant decrease in mean PUSH scores of PrUs (case) (t=6.13, P<0.000) and PrUs (control) (t=3.98, P=0.000) was observed after 5 weeks. The wound surface area of PrU (case) decreased significantly (t=4.98, P=0.000); however, the decrease was not significant (t=0.095, P=0.924) in PrUs (control). Majority of histopathological pictures of PrUs (case) showed necrosis and sup suspension (56%) at the time of enrollment and well-formed granulation tissue and epithelialization (60%) at the 5th week. Twenty-four (96%) PrUs (case) improved and only 1 deteriorated with PRP therapy, whereas in control group 17 (68%) PrUs improved, 7 (28%) deteriorated and 1 wound showed no change. CONCLUSIONS: Advanced wound therapy using local applications of PRP seems to be a promising alternative to standard saline dressings in PrU healing. With the advantages of simple preparation, biocompatible safety, low cost and significant clinical effectiveness, it may be beneficial to study the effects of PRP in large-scale trials to validate it as an ideal therapy for enhanced wound healing in PrUs.

Publication type: Journal Article
Source: MEDLINE
Full text: Available Nature Publishing Group at Spinal Cord

33. Title: Secondary adrenal insufficiency after glucocorticosteroid administration in acute spinal cord injury: A case report.
Citation: Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(786-90), 1079-0268;1079-0268 (2014 Nov)
Author(s): Yang H, Trbovich M, Harrow J
Language: English
Abstract: Context/background A 61-year-old female with cervical stenosis underwent an elective cervical laminectomy with post-op worsening upper extremity weakness. Over the first 3 weeks post-op, she received two separate courses of intravenous steroids. Two days after cessation of steroids, she presented with non-specific symptoms of adrenal insufficiency (AI). Initial formal diagnostic tests of random cortisol level and 250 g cosyntropin challenge were non-diagnostic; however, symptoms resolved with the initiation of empiric treatment with hydrocortisone. Ten days later, repeat cosyntropin (adrenocorticotropic hormone stimulation) test confirmed the diagnosis of AI. Findings AI is a potentially life-threatening complication of acute spinal cord injury (ASCI), especially in those receiving steroids acutely. Only three cases have been reported to date of AI occurring in ASCI after steroid treatment. The presenting symptoms can be non-specific (as in this patient) and easily confused with other common sequelae of ASCI such as orthostasis and diffuse weakness. The 250 g cosyntropin simulation test may not be the most sensitive test to diagnose AI in ASCI. Conclusion The non-specific presentations and variability of diagnosis criteria make diagnosis more difficult. One microgram cosyntropin simulation test may be more sensitive than higher dose. Clinicians should be aware that AI can be a potential life-threatening complication of ASCI post-steroid treatment. Prompt diagnosis and treatment can reverse symptoms and minimize mortality.
Publication type: Journal Article
Source: MEDLINE
Full text: Available The journal of spinal cord medicine at Journal of Spinal Cord Medicine, The

34. Title: Secondary health conditions associated with spinal cord injury
Citation: Critical Reviews in Physical and Rehabilitation Medicine, 2014, vol./is. 26/3-4(181-191), 0896-2960;2162-6553 (2014)
Author(s): Canning K.L., Hicks A.L.
Language: English
Abstract: Spinal cord injury (SCI) results in many changes within the motor and sensory systems. These changes create difficulties in the lives of individuals dealing with their injury as well as their support groups. Secondary health conditions are commonly associated with SCI and create negative effects on the well-being and overall quality of life of the individual. These secondary health conditions are associated with increased hospitalizations and increased economic burden for the individual. There are a plethora of secondary health conditions that have been previously reported to be associated with SCIs; some of those conditions are addressed in this article. The purpose of this article is to review the relevant literature surrounding pressure ulcers, urinary tract infections, respiratory dysfunction, cardiovascular disorders, pain, and psychological conditions.
Publication type: Journal: Article
Source: EMBASE

A total of 1,549 persons with SCI (traumatic lesion, n = 1,137; nontraumatic lesion, n = 412) across Canada completed the survey. Most critical needs for community integration were expressed by a substantial proportion of people with SCI. Complications remain highly prevalent for some health issues, including pain, sexual dysfunction, and musculoskeletal disorders. The extent of community participation based on values and preferences varies tremendously among daily activities and social roles. Some dimensions of quality of life are rated positively (e.g., family life) while others are greatly disrupted (e.g., sex life and physical health). Most of these findings vary significantly between people with traumatic and nontraumatic lesions. Conclusion: This survey is the first in Canada and among the first worldwide to draw a comprehensive picture of major aspects of the lives of people with SCI including service needs. The results will help to determine the links between various aspects of community living and guide service providers and policy makers in focusing on major issues to enhance quality of life after SCI.

Publication type: journal article
Source: CINAHL
Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

Citation: Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(249-264), 10820744
Author(s): Noreau, Luc, Noonan, Vanessa K., Cobb, John, Leblond, Jean, Dumont, Frédéric S.
Language: English
Abstract: Background: To better understand service-related needs and the current situation of persons with spinal cord injury (SCI) living in the community, a more comprehensive approach for studying their interrelationships (needs vs community living outcomes) is greatly needed. Objective: To describe the development, design, and findings of a Canadian survey portraying the life situation of people with SCI. Method: The SCI Community Survey covers demographics, health, SCI-specific needs, community participation, employment, quality of life, health care utilization, and overall health rating. A total of 1,549 persons with SCI completed the survey (Web or phone) between May 2011 and August 2012. Results: Some major expressed needs for services to support community living are met to a great extent for a substantial proportion of people with SCI. Complications remain highly prevalent for some health issues, including pain, sexual dysfunction, and musculoskeletal disorders. The extent of community participation based on values and preferences varies tremendously among daily activities and social roles. Some dimensions of quality of life are rated positively (e.g., family life) while others are greatly disrupted (e.g., sex life and physical health). Most of these findings vary significantly between people with traumatic and nontraumatic lesions. Conclusion: This survey is the first in Canada and among the first worldwide to draw a comprehensive picture of major aspects of the lives of people with SCI including service needs. The results will help to determine the links between various aspects of community living and guide service providers and policy makers in focusing on major issues to enhance quality of life after SCI.
Publication type: journal article
Source: CINAHL
Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

37. Title: Spinal Cord Injury Community Survey: Understanding the Needs of Canadians with SCI.
Citation: Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(265-276), 10820744
Author(s): Noreau, Luc, Noonan, Vanessa K., Cobb, John, Leblond, Jean, Dumont, Frédéric S.
Language: English
Abstract: Background: There is a lack of literature regarding service needs of people with SCI living in the community. Better assessment of expressed and met and unmet needs would help in the development of effective service delivery. Objective: From a national SCI Community Survey in Canada, the aim was to identify the most critical service needs of people living in the community at least 1 year post discharge from rehabilitation and the support they received to meet their needs. Method: Data were collected mainly through a secure Web site and encompassed demographics, personal and household income, an SCI seventy measure, and an SCI community needs measure containing information on 13 SCI-related needs. Results: A total of 1,549 persons with SCI (traumatic lesion, n = 1,137; nontraumatic lesion, n = 412) across Canada completed the survey. Most critical needs for community integration were expressed by a substantial proportion of survey participants, but significantly more expressed and met needs were reported by persons with a traumatic than a.

Publication type: journal article
Source: CINAHL
Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation
nontraumatic lesion. Personal and environmental characteristics influenced the probability of expressing and meeting needs (e.g., severity of injury and household income). Help and support to meet expressed needs were received from government agencies, community organizations, and friends or family. Conclusion: Better assessment of expressed and met or unmet needs for services remains a challenge but will serve as a tool to optimize service delivery in the community. Environmental barriers to services, particularly the process of getting needs met and associated costs, remain an issue that requires a reconsideration of some aspects of access to services.

**Publication type:** journal article

**Source:** CINAHL

**Full text:** Available *Topics in Spinal Cord Injury Rehabilitation* at *Topics in Spinal Cord Injury Rehabilitation*

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**38. Title:** Spinal Cord Injury survey to determine pressure ulcer vulnerability in the outpatient population

**Citation:** Medical Hypotheses, November 2014, vol./is. 83/5(552-558), 0306-9877;1532-2777 (01 Nov 2014)

**Author(s):** Gould L.J., Olney C.M., Nichols J.S., Block A.R., Simon R.M., Guihan M.

**Language:** English

**Abstract:** Pressure ulcers are one of the most common causes of morbidity, mortality and rehospitalization for those living with Spinal Cord Injury (SCI). Literature examining risk and recurrence of pressure ulcers (PrUs) has primarily focused on the nursing home elderly who do not have SCI. More than 200 factors that increase PrU risk have been identified. Yet unlike the elderly who incur pressure ulcers in nursing homes or when hospitalized, most persons with SCI develop their pressure ulcers as outpatients, while residing in the community. The Veterans Health Administration (VHA) provides medical care for a large number of persons with chronic SCI. Included in the VHA SCI model of chronic disease management is the provision of an annual Comprehensive Preventive Health Evaluation, a tool that has potential to identify individuals at high risk for PrUs. This research was motivated by the clinical observation that some individuals appear to be protected from developing PrUs despite apparently 'risky' behaviors while others develop PrUs despite vigilant use of the currently known preventative measures. There is limited literature regarding protective factors and specific risk factors that reduce PrU occurrence in the community dwelling person with chronic SCI have not been delineated. The purpose of this study is to examine the preliminary hypothesis that there are biological and/or psychosocial factors that increase or reduce vulnerability to PrUs among persons with SCI. A limited number of refined hypotheses will be generated for testing in a prospective fashion. A retrospective cross-sectional survey of 119 randomly selected Veterans with SCI undergoing the Comprehensive Health Prevention Evaluation during the year 2009 was performed. Factors that differed between patients with 0, 1 or >2 PrUs were identified and stratified, with an emphasis on modifiable risk factors. Three hypotheses generated from this study warrant further investigation: (1) cumulative smoking history increases the risk of PrUs independent of co-morbidities, (2) being moderately overweight, BMI >. 25, with or without spasticity, is a modifiable factor that may be protective and (3) increased use of a caregiver does not reduce PrU risk. Prospective studies that focus on these hypotheses will lead to evidence-based risk assessment tools and customized interventions to prevent PrUs in persons with SCI in the outpatient setting.

**Publication type:** Journal: Article

**Source:** EMBASE

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**39. Title:** Subepidermal moisture surrounding pressure ulcers in persons with a spinal cord injury: A pilot study.

**Citation:** Journal of Spinal Cord Medicine, November 2014, vol./is. 37/6(719-28), 1079-0268;1079-0268 (2014 Nov)

**Author(s):** Harrow JJ, Mayrovitz HN

**Language:** English

**Abstract:** Objective Characterization of a non-invasive method of quantifying subepidermal moisture (SEM) surrounding stages III and IV pressure ulcers (PrUs) in spinal cord injury (SCI). Design Prospective, single-visit, single-rater, observational study, using repeated-measures analysis. Method Setting-inpatient units of one VA SCI Center. Participants Convenience sample of 16 subjects with SCI with stage III or IV PrUs over sacrum or ischium. Interventions Measurement with the MoistureMeter-D, a hand-held device using 300 MHz electromagnetic waves. Outcome measures Dielectric constant, a dimensionless number which increases with the moisture content. Each subject had a PrU site and a control site. Measurements were made at each site, on intact skin, at four points spaced angularly around the site, in triplicate. Results (1) Short-term, single-rater relative error was 2.5%. (2) Order effect: first readings were higher than second readings in 55 of 64 measurement sets. Order effect was significant for control sites (P < 0.0001) but not for PrU sites. (3) Angular effect: SEM varied by angle at the PrU site (P < 0.01); 12 o’clock position the highest and 6 o’clock the lowest. (4) Ability to differentiate PrUs from intact skin: SEM at PrU sites was greater by 9.0% than control sites (P < 0.05). (5) Site effect: SEM was higher at sacral locations than ischial at control sites by 20% (P < 0.005). Conclusions SEM differentiates PrUs from intact skin. Future study designs must take into account order, angular, and site effects on this measure. This information will inform designers of future studies of SEM in healing of PrUs.

**Publication type:** Journal Article

**Source:** MEDLINE

**Full text:** Available *The journal of spinal cord medicine* at *Journal of Spinal Cord Medicine, The*
Likewise, the effects of TLR ligands have been demonstrated in vivo using animal models of CNS trauma and disease. Direct and indirect effects of TLR ligands on neurons and glial subtypes have been documented in vitro. TLRs have been related to cells, TLRs have been like receptors in central nervous system injury and disease: A focus on the spinal cord. TLRs are best known for recognizing pathogens and initiating an innate immune response to protect the host. However, they also detect tissue damage and induce sterile inflammation upon the binding of endogenous ligands released by stressed or injured cells. In addition to immune system-related cells, TLRs have been identified in central nervous system (CNS) neurons and glial subtypes including microglia, astrocytes and oligodendrocytes. Direct and indirect effects of TLR ligands on neurons and glial subtypes have been documented in vitro. Likewise, the effects of TLR ligands have been demonstrated in vivo using animal models of CNS trauma and disease.
including spinal cord injury (SCI), amyotrophic lateral sclerosis (ALS) and neuropathic pain. The indirect effects are most likely mediated via microglia or immune system cells that infiltrate the diseased or injured CNS. Despite considerable progress over the past decade, the role of TLRs in the physiological and pathological function of the spinal cord remains inadequately defined. Published reports collectively highlight TLRs as promising targets for therapeutic interventions in spinal cord pathology. The findings also underscore the complexity of TLR-mediated mechanisms and the necessity for further research in this field. The goals of the current review are to recapitulate the studies that investigated the role of TLRs in the spinal cord, to discuss potential future research directions, and to examine some of the challenges associated with pre-clinical studies pertinent to TLRs in the injured or diseased spinal cord.

Publication type: Journal: Review
Source: EMBASE

43. Title: Tracking functional status across the spinal cord injury lifespan: Linking pediatric and adult patient-reported outcome scores
Citation: Archives of Physical Medicine and Rehabilitation, November 2014, vol./is. 95/11(2078-2085), 0003-9993;1532-821X (01 Nov 2014)
Author(s): Tian F., Ni P., Mulcahey M.J., Hambleton R.K., Tulsky D., Haley S.M., Jette A.M.
Language: English
Abstract: Objective To use item response theory (IRT) methods to link scores from 2 recently developed contemporary functional outcome measures, the adult Spinal Cord Injury-Functional Index (SCI-FI) and the Pedi SCI (both the parent version and the child version). Design Secondary data analysis of the physical functioning items of the adult SCI-FI and the Pedi SCI instruments. We used a nonequivalent group design with items common to both instruments and the Stocking-Lord method for the linking. Linking was conducted so that the adult SCI-FI and Pedi SCI scaled scores could be compared. Setting Community. Participants This study included a total sample of 1558 participants. Pedi SCI items were administered to a sample of children (n=381) with SCI aged 8 to 21 years, and of parents/caregivers (n=322) of children with SCI aged 4 to 21 years. Adult SCI-FI items were administered to a sample of adults (n=855) with SCI aged 18 to 92 years. Interventions Not applicable. Main Outcome Measures Five scales common to both instruments were included in the analysis: Wheelchair, Daily Routine/Self-care, Daily Routine/Fine Motor, Ambulation, and General Mobility functioning. Results Confirmatory factor analysis and exploratory factor analysis results indicated that the 5 scales are unidimensional. A graded response model was used to calibrate the items. Misfitting items were identified and removed from the item banks. Items that function differently between the adult and child samples (ie, exhibit differential item functioning) were identified and removed from the common items used for linking. Domain scores from the Pedi SCI instruments were transformed onto the adult SCI-FI metric. Conclusions This IRT linking allowed estimation of adult SCI-FI scale scores based on Pedi SCI scale scores and vice versa; therefore, it provides clinicians with a means of tracking long-term functional data for children with an SCI across their entire lifespan.

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

44. Title: Understanding Quality of Life in Adults with Spinal Cord Injury Via SCI-Related Needs and Secondary Complications.
Citation: Topics in Spinal Cord Injury Rehabilitation, 01 October 2014, vol./is. 20/4(321-328), 10820744
Author(s): Sweet, Shane N., Noreau, Luc, Leblond, Jean, Dumont, Frédéric S.
Language: English
Abstract: Background: Understanding the factors that can predict greater quality of life (QoL) is important for adults with spinal cord injury (SCI), given that they report lower levels of QoL than the general population. Objectives: To build a conceptual model linking SCI-related needs, secondary complications, and QoL in adults with SCI. Prior to testing the conceptual model, we aimed to develop and evaluate the factor structure for both SCI-related needs and secondary complications. Methods: Individuals with a traumatic SCI (N = 1,137) responded to an online survey measuring 13 SCI-related needs, 13 secondary complications, and the Life Satisfaction Questionnaire to assess QoL. The SCI-related needs and secondary complications were conceptualized into factors, tested with a confirmatory factor analysis, and subsequently evaluated in a structural equation model to predict QoL. Results: The confirmatory factor analysis supported a 2-factor model for SCI related needs, $\chi^2(61, N = 1,137) = 250.40, P < .001$, comparative fit index (CFI) = .93, root mean square error of approximation (RMSEA) = .05, standardized root mean square residual (SRMR) = .04, and for 11 of the 13 secondary complications, $\chi^2 (44, N = 1,137) = 305.67, P < .001$, CFI = .91, RMSEA = .060, SRMR = .033. The final 2 secondary complications were kept as observed constructs. In the structural model, both vital and personal development unmet SCI-related needs ($13\sim .22$ and $- .20, P < .05$, respectively) and the neuro-physiological systems factor ($P = -.45, P < .05$) were negatively related with QoL. Conclusions: Identifying unmet SCI-related needs of individuals with SCI and preventing or
managing secondary complications are essential to their QoL.

**Publication type:** journal article

**Source:** CINAHL

**Full text:** Available *Topics in Spinal Cord Injury Rehabilitation* at *Topics in Spinal Cord Injury Rehabilitation*

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**45. Title:** Urodynamic results, clinical efficacy, and complication rates of sacral intradural deafferentation and sacral anterior root stimulation in patients with neurogenic lower urinary tract dysfunction resulting from complete spinal cord injury

**Citation:** Neurourology and Urodynamics, November 2014, vol./is. 33/8(1202-1206), 0733-2467;1520-6777 (01 Nov 2014)

**Author(s):** Krasmik D., Krebs J., Van Ophoven A., Pannek J.

**Language:** English

**Abstract:** Aims: To investigate the outcome and complications of sacral deafferentation (SDAF) and sacral anterior root stimulation (SARS) in patients with neurogenic lower urinary tract dysfunction (NLUTD) resulting from complete spinal cord injury (SCI). Methods: Retrospective chart analysis of 137 patients who underwent SDAF/SARS at a single institution. Patients were categorized as being at risk of renal damage when the maximum detrusor pressure was >40 cmH₂O or detrusor compliance was <20 ml/cmH₂O. Results: After a mean follow-up time of 14.8 + 5.3 years, SDAF/ SARS treatment significantly (P < 0.001) reduced the number of patients suffering from elevated detrusor pressure from 65 to 2, and from low detrusor compliance from 62 to 13, respectively. Mean bladder capacity significantly (P < 0.001) improved from 272.4 + 143.0 to 475.0 + 82.7 ml. The mean number of symptomatic UTI also decreased significantly (P < 0.001) from 6.2 + 4.5 to 2.5 + 2.6 per year. The number of patients suffering from incontinence had significantly (P < 0.001) decreased from 70 to 44. At the last follow-up visit, 107 (78.1%) patients were still using the stimulator. A total of 84 complications requiring surgical revision were observed. Defects of the stimulator cables or the receiver plate were the most common events (n = 38). The retrospective design pertains to the limitations of the study. Conclusions: Sacral deafferentation and SARS are an effective treatment option for refractory NLUTD in patients with complete SCI, despite a substantial long-term complication rate.

**Publication type:** Journal: Article

**Source:** EMBASE

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**New Library Resources**

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Tim Rushby-Smith is six foot two and highly active, with a love of high places and the great outdoors. Three years ago, with a booming garden design and landscaping business and his wife five months pregnant with their first child, Tim fell six metres out of a tree and broke his back, confining him to a wheelchair.
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