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### New and Updated Cochrane Systematic Reviews

**New Reviews – April 2015**

- **Percutaneous vertebroplasty for osteoporotic vertebral compression fracture**

**New Reviews – May 2015**

- **Alginate dressings for treating pressure ulcers**
- **Negative pressure wound therapy for treating pressure ulcers**

### Journal Articles

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37. Trunk control impairment is responsible for postural instability during quiet sitting in individuals with cervical spinal cord injury.

1. Title: A 16-week randomized controlled trial evaluating the physical activity guidelines for adults with spinal cord injury.
Citation: Spinal Cord, 01 May 2015, vol./is. 53/5(363-367), 13624393
Author(s): Pelletier, C A, Totosy de Zepetnek, J O, MacDonald, M J, Hicks, A L
Language: English
Abstract: Study Design:Randomized controlled trial. Objectives:To evaluate the effectiveness of the physical activity guidelines (PAG) for adults with spinal cord injury (SCI) to improve aspects of physical fitness. Setting:Community exercise facility. Methods:Twenty-three participants (age: 40.4±11.6 years, C1-T11, 12.0±10.0 years post injury) were randomized into PAG training (n=12) or active control (CON, n=11) groups. PAG training was 2x per week for 16
weeks and involved 20 min of aerobic exercise at a moderate to vigorous intensity and three sets of 10 repetitions (at 50-70% 1 repetition maximum; 1RM). Pre- and post-testing included peak exercise and aerobic endurance tests on an arm ergometer and 1RM testing. Results: Nineteen participants (PAG, n=11; CON, n=8) completed the 16-week training program and post-testing. There was a significant (P<0.05) increase in peak aerobic capacity (relative VO2peak: 17.2%, absolute VO2peak: 9.9%) and submaximal power output (26.3%) in the PAG group only. Increases in strength ranged from 11.5-38.9% and were significantly (P<0.05) different from CON for vertical bench press, seated row, and rickshaw press. Adherence to the exercise program was 85.2±8.3% for PAG, 44.4±34.3% for CON (P<0.01). Conclusion: The PAG for adults with SCI are sufficient to improve aspects of aerobic and muscular fitness and should be promoted as a means to improve physical capacity. Sponsorship: Ontario Neurotrauma Foundation (ONF), Natural Sciences and Engineering Research Council (NSERC) of Canada.

**Publication type:** journal article

**Source:** CINAHL

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

2. **Title:** Acute cardiorespiratory and metabolic responses during exoskeleton-assisted walking overground among persons with chronic spinal cord injury

**Citation:** Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(122-132), 1082-0744;1945-5763 (01 Mar 2015)

**Author(s):** Evans N., Hartigan C., Kandalakis C., Pharo E., Clesson I.

**Language:** English

**Abstract:** Background: Lower extremity robotic exoskeleton technology is being developed with the promise of affording people with spinal cord injury (SCI) the opportunity to stand and walk. The mobility benefits of exoskeleton-assisted walking can be realized immediately, however the cardiorespiratory and metabolic benefits of this technology have not been thoroughly investigated. Objective: The purpose of this pilot study was to evaluate the acute cardiorespiratory and metabolic responses associated with exoskeleton-assisted walking overground and to determine the degree to which these responses change at differing walking speeds. Methods: Five subjects (4 male, 1 female) with chronic SCI (AIS A) volunteered for the study. Expired gases were collected during maximal graded exercise testing and two, 6-minute bouts of exoskeleton-assisted walking overground. Outcome measures included peak oxygen consumption (VO2peak), average oxygen consumption (VO2avg), peak heart rate (HRpeak), walking economy, metabolic equivalent of tasks for SCI (METsci), walk speed, and walk distance. Results: Significant differences were observed between walk-1 and walk-2 for walk speed, total walk distance, VO2peak, and METsci. Exoskeleton-assisted walking resulted in %VO2peak range of 51.5% to 63.2%. The metabolic cost of exoskeleton-assisted walking ranged from 3.5 to 4.3 METsci. Conclusion: Persons with motor-complete SCI may be limited in their capacity to perform physical exercise to the extent needed to improve health and fitness. Based on preliminary data, cardiorespiratory and metabolic demands of exoskeleton-assisted walking are consistent with activities performed at a moderate intensity.

**Publication type:** Journal: Article

**Source:** EMBASE

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

3. **Title:** Antidepressants are effective in decreasing neuropathic pain after SCI: A meta-analysis

**Citation:** Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(166-173), 1082-0744;1945-5763 (01 Mar 2015)

**Author(s):** Mehta S., Guy S., Lam T., Teasell R., Loh E.

**Language:** English

**Abstract:** Objective: To systematically review and assess the effectiveness and safety of antidepressants for neuropathic pain among individuals with spinal cord injury (SCI). Methods: A systematic search was conducted using multiple databases for relevant articles published from 1980 to April 2014. Randomized controlled trials (RCTs) involving antidepressant treatment of neuropathic pain with >3 individuals and >50% of study population with SCI were included. Two independent reviewers selected studies based on inclusion criteria and then extracted data. Pooled analysis using Cohen’s d to calculate standardized mean difference, standard error, and 95% confidence interval for primary (pain) and other secondary outcomes was conducted. Results: Four RCTs met inclusion criteria. Of these, 2 studies assessed amitriptyline, 1 trazadone, and 1 duloxetine among individuals with neuropathic SCI pain. A small effect was seen in the effectiveness of antidepressants in decreasing pain among individuals with SCI (standardized mean difference = 0.34 +/- 0.15; 95% CI, 0.05-0.62; P = .02). A number needed to treat of 3.4 for 30% or more pain relief was found by pooling 2 studies. Of these differences, significantly higher risk of experiencing constipation
(risk ratio [RR] = 1.74; 95% CI, 1.09-2.78; P = .02) and dry mouth (RR = 1.39; 95% CI, 1.04-1.85; P = .02) was found amongst individuals receiving antidepressant treatment compared to those in the control group. Conclusion: The current meta-analysis demonstrates that antidepressants are effective in reducing neuropathic SCI pain. However, this should be interpreted with caution due to the limited number of studies. Further evaluation of long-term therapeutic options may be required.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

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4. **Title:** Assessment of in-hospital walking velocity and level of assistance in a powered exoskeleton in persons with spinal cord injury  
**Citation:** Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(100-109), 1082-0744;1945-5763 (01 Mar 2015)  
**Author(s):** Yang A., Asselin P., Knezevic S., Kornfeld S., Spungen A.M.  
**Language:** English  
**Abstract:** Background: Individuals with spinal cord injury (SCI) often use a wheelchair for mobility due to paralysis. Powered exoskeleton-assisted walking (EAW) provides a modality for walking overground with crutches. Little is known about the EAW velocities and level of assistance (LOA) needed for these devices. Objective: The primary aim was to evaluate EAW velocity, number of sessions, and LOA and the relationships among them. The secondary aims were to report on safety and the qualitative analysis of gait and posture during EAW in a hospital setting. Methods: Twelve individuals with SCI >1.5 years who were wheelchair users participated. They wore a powered exoskeleton (ReWalk; ReWalk Robotics, Inc., Marlborough, MA) with Lofstrand crutches to complete 10-meter (10MWT) and 6-minute (6MWT) walk tests. LOA was defined as modified independence (MI), supervision (S), minimal assistance (Min), and moderate assistance (Mod). Best effort EAW velocity, LOA, and observational gait analysis were recorded. Results: Seven of 12 participants ambulated >0.40 m/s. Five participants walked with MI, 3 with S, 3 with Min, and 1 with Mod. Significant inverse relationships were noted between LOA and EAW velocity for both 6MWT (Z value = 2.63, Rho = .79, P = .0086) and 10MWT (Z value = 2.62, Rho = 0.79, P = .0088). There were 13 episodes of mild skin abrasions. MI and S groups ambulated with 2-point alternating crutch pattern, whereas the Min and Mod groups favored 3-point crutch gait. Conclusion: Seven of 12 individuals studied were able to ambulate at EAW velocities >0.40 m/s, which is a velocity that may be conducive to outdoor activity-related community ambulation. The ReWalk is a safe device for in-hospital ambulation.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

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5. **Title:** Balance during walking on an inclined instrumented pathway following incomplete spinal cord injury.  
**Citation:** Spinal Cord, 01 May 2015, vol./is. 53/5(387-394), 13624393  
**Author(s):** Desrosiers, É, Nadeau, S, Duclos, C  
**Language:** English  
**Abstract:** Objectives: To study the postural adaptations of subjects with incomplete spinal cord injury (iSCI) and non-injured subjects during overground walking on level and inclined surfaces. Methods: Six subjects with iSCI and seven non-injured subjects walked on an inclined surface (slope: 15%) and a level surface at their natural gait speed and at a slow gait speed (non-injured subjects only). Maximal stabilizing and minimal destabilizing forces were calculated to quantify dynamic balance during walking. Correlational analysis identified the variables that influence these stabilizing and destabilizing forces. Results: Subjects with iSCI and good sensorimotor recovery were similar to non-injured subjects with respect to maximal stabilizing and minimal destabilizing forces when they walked at the same speed. The MaxSF was mainly explained by the center of pressure speed and step length, whereas the minimal destabilizing force was moderately correlated with body mass and height. Conclusion: The influence of gait speed on balance should be considered with a group comparison. With regard to dynamic balance, highly functioning subjects with iSCI do not seem to be sufficiently challenged while walking at their preferred gait speed. Asking individuals with subtle impairments to walk faster following an iSCI may reveal postural adaptations and have an effect on balance abilities.

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

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6. **Title:** Beliefs relating to recurrence of heterotopic ossification following excision in patients with spinal cord...
7. Title: Bladder Cancer Mortality after Spinal Cord Injury over 4 Decades.

Citation: The Journal of urology, Jun 2015, vol. 193, no. 6, p. 1923-1928 (June 2015)

Author(s): Nahm, Laura S, Chen, Yuying, DeVivo, Michael J, Lloyd, L Keith

Abstract: We estimate bladder cancer mortality in people with spinal cord injury compared to the general population. Data and statistics were retrieved from the National Spinal Cord Injury Statistical Center and the National Center for Health Statistics. The mortality experience of the 45,486 patients with traumatic spinal cord injury treated at a Spinal Cord Injury Model System or Shriners Hospital was compared to the general population using a standardized mortality ratio. The standardized mortality ratio data were further stratified by age, gender, race, time since injury and injury severity. Our study included 566,532 person-years of followup between 1960 and 2009, identified 10,575 deaths and categorized 99 deaths from bladder cancer. The expected number of deaths from bladder cancer would have been 14.8 if patients with spinal cord injury had the same bladder cancer mortality as the general population. Thus, the standardized mortality ratio is 6.7 (95% CI 5.4-8.1). Increased mortality risk from bladder cancer was observed for various ages, races and genders, as well as for those injured for 10 or more years and with motor complete injuries. Bladder cancer mortality was not significantly increased for ventilator users, those with motor incomplete injuries or those injured less than 10 years. Individuals with a spinal cord injury can potentially live healthier and longer by reducing the incidence and mortality of bladder cancer. Study findings highlight the need to identify at risk groups and contributing factors for bladder cancer death, leading to the development of prevention, screening and management strategies. Copyright © 2015 American Urological Association Education and Research, Inc. Published by Elsevier Inc. All rights reserved.

Source: Medline

Full text: Available Elsevier at Salisbury District Hospital Healthcare Library

Full text: Available Elsevier at Journal of Urology, The

8. Title: Depression following spinal cord injury: Its relationship to demographic and socioeconomic indicators

Citation: Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(149-155), 1082-0744;1945-5763 (01 Mar 2015)

Author(s): Khazaiepour Z., Taheri-Otaghsara S.-M., Naghdi M.

Language: English

Abstract: Background: Depression is a common psychological problem that decreases life satisfaction and quality of life in people with spinal cord injury (SCI). Objective: The aim of this study was to investigate the prevalence of depression after SCI and its association with pathophysiological, demographic, and socioeconomic factors, including sex, age, level of injury, financial status, and suicidal thoughts. Methods: This was a cross-sectional study of 134 adults (>18 years old) with SCI who were referred to the Brain and Spinal Cord Injury Research Center (BASIR) clinic, Tehran University of Medical Sciences, for outpatient rehabilitation. The Beck Depression Inventory (BDI-II Persian),
a 21-question multiple-choice inventory, was used to measure the presence and severity of depression. Data were collected by interview. Results: Sixty-six (49.3%) participants had mild to severe depression. There was a higher probability of depression in individuals with SCI who were female, had tetraplegia, had suicidal thoughts, had a history of suicide attempt, had a low education level, or were taken cared for by a family member other than a spouse or parents. Conclusion: Depression was highly prevalent in individuals with SCI and was related to some demographic, pathophysiological, and socioeconomic indicators. The primary predictive indicators and the factors influencing depression should be determined to provide early detection and timely treatment to prevent more complications and improve quality of life for individuals with SCI.

**Publication type:** Journal: Article

**Source:** EMBASE

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

9. **Title:** Development of heterotopic ossifications, blood markers and outcome after radiation therapy in spinal cord injured patients.

**Citation:** Spinal Cord, 01 May 2015, vol./is. 53/5(345-348), 13624393

**Author(s):** Krauss, H, Maier, D, Bühren, V, Högel, F

**Language:** English

**Abstract:** Study Design: Retrospective study. Objectives: This study was implemented to detect risk factors for the developing of heterotopic ossifications (HOs) in spinal cord injury (SCI) patients. Setting: This study was conducted in Murnau, Germany. Methods: All patients from 2008-2012 with acute SCI were routinely examined by ultrasound of the hips every 2 weeks. The sub group of SCI patients suffering of HO of the hips were extracted and the incidence of developing an HO was calculated. Parameters like age, level of injury, ASIA Impairment Scale (AIS), duration time of accident until diagnosis of HO, Brooker stage, localization of HO (magnetic resonance imaging (MRI)) and symptoms like thrombosis, emboli, decrease of range of motion (ROM), dermal symptoms, swelling, increase in D-Dimere level, were evaluated. Also accompanying injuries of the brain, lung and extremities were recorded. Results: From January 2008 until January 2012, 575 patients with an acute and traumatic SCI were treated in our Department. During this period 32 HOs were detected in the muscles surrounding the hip. In 10 cases a single side and in 22 cases both sides were affected. A total of 26 patients were detected showing up a Brooker 0, two patients Brooker 1, and five patients a Brooker stage >2. The adductor muscles showed an edema in 19 cases and the quadriceps muscles were affected in 15 cases. 26% of all SCI patients showed AIS A status, but in patients who developed HO, 64% have had an AIS A status. 19% of patients with a HO were AIS B and 9.5% showed an AIS C and D. Regarding the level of injury the distribution of patients suffering of HO was comparable to the distribution of SCI patients without HO. In mean HO were detected 9 weeks after SCI and no new HO were found after the 22nd (n=1) week of injury. Clinical symptoms such as swelling, pain, redness or decrease in ROM or increase in D-Dimere levels were seen in 24 cases. Accompanying injuries like brain injury and lung contusions were found in 83% of patients developing HO. The incidence of thrombosis was comparable to SCI patients without HO. One patient with no accompanying injuries or clinical symptoms was detected by routinely performed ultrasound. Conclusions: The risk of developing HO in patients with traumatic SCI is 5.5% but increases when accompanying injuries of the brain and lung occur. Patients with a neurological status of AIS A must also be quoted as risk patients. When considering the described risk factors and clinical symptoms, 96% of all HO can be detected.

**Publication type:** journal article

**Source:** CINAHL

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

10. **Title:** Effects of adult romantic attachment and social support on resilience and depression in individuals with spinal cord injuries

**Citation:** Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(156-165), 1082-0744;1945-5763 (01 Mar 2015)

**Author(s):** Dodd Z., Driver S., Warren A.M., Riggs S., Clark M.

**Language:** English

**Abstract:** Background: Spinal cord injury (SCI) can cause psychological consequences that negatively affect quality of life. It is increasingly recognized that factors such as resilience and social support may produce a buffering effect and are associated with improved health outcomes. However, the influence of adult attachment style on an individual's ability to utilize social support after SCI has not been examined. Objective: The purpose of this study was to examine relationships between adult romantic attachment, perceived social support, depression, and resilience in individuals with SCI. In addition, we evaluated potential mediating effects of social support and adult attachment on resilience and depression. Methods: Participants included 106 adults with SCI undergoing inpatient rehabilitation. Individuals
completed measures of adult attachment (avoidance and anxiety), social support, resilience, and depression. Path analysis was performed to assess for presence of mediation effects. Results: When accounting for the smaller sample size, support was found for the model (comparative fit index = .927; chi square = 7.86, P = .01; beta = -.025, standard error [SE ] = -2.93, P < .05). The mediating effect of social support on the association between attachment avoidance and resilience was the only hypothesized mediating effect found to be significant (beta = -.025, SE = -2.93, P < .05).

Conclusion: Results suggest that individuals with SCI with higher levels of attachment avoidance have lower perceived social support, which relates to lower perceived resilience. Assessing attachment patterns during inpatient rehabilitation may allow therapists to intervene to provide greater support.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

11. **Title:** Effects of hybrid cycling versus handcycling on wheelchair-specific fitness and physical activity in people with long-term spinal cord injury: a 16-week randomized controlled trial.  
**Citation:** Spinal Cord, 01 May 2015, vol./is. 53/5(395-401), 13624393  
**Author(s):** Bakkum, A J T, de Groot, S, Stolwijk-Swüste, J M, van Kuppevelt, D J, van der Woude, L H V, Janssen, T W J  
**Language:** English  
**Abstract:** Study design: This is an open randomized controlled trial. Objective: The objective of this study was to investigate the effects of a 16-week hybrid cycle versus handcycle exercise program on fitness and physical activity in inactive people with long-term spinal cord injury (SCI). Setting: The study was conducted in two rehabilitation centers with a specialized SCI unit. Methods: Twenty individuals (SCI ≥ 8 years) were randomly assigned to a hybrid cycle (voluntary arm exercise combined with functional electrical stimulation (FES)-induced leg exercise) or a handcycle group. During 16 weeks, both groups trained twice a week for 30 min at 65-75% heart rate reserve. Outcome measures obtained before, during and after the program were fitness (peak power output, peak oxygen consumption), submaximal VO$_2$ and heart rate (HR), resting HR, wheelchair skill performance time score) and physical activity (distance travelled in wheelchair and Physical Activity Scale for Individuals with Physical Disabilities (PASIPD) score). Changes were examined using a two-factor mixed-measures analysis of variance. Results: For all fitness parameters, except for submaximal VO$_2$, no interaction effects were found. The hybrid cycle group showed a decrease in VO$_2$ over time in contrast to the handcycle group (P = 0.045). An overall reduction in HR rest (P = 0.03) and overall increase in PASIPD score (6.5 ± 2.1; P = 0.002) were found after 16 weeks of training. No overall training effects were found for the other fitness and activity outcome measures. Conclusion: In the current study, hybrid cycling and handcycling showed similar effects on fitness and physical activity, indicating that there seem to be no additional benefits of the FES-induced leg exercise over handcycle training alone.

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

12. **Title:** Energy cost of lower body dressing, pop-over transfers, and manual wheelchair propulsion in people with paraplegia due to motor-complete spinal cord injury  
**Citation:** Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(140-148), 1082-0744;1945-5763 (01 Mar 2015)  
**Author(s):** Lynch M.M., McCormick Z., Liem B., Jacobs G., Hwang P., Hornby T.G., Rydberg L., Roth E.J.  
**Language:** English  
**Abstract:** Background: Energy required for able-bodied individuals to perform common activities is well documented, whereas energy associated with daily activities among people with spinal cord injury (SCI) is less understood. Objective: To determine energy expended during several basic physical tasks specific to individuals with paraplegia due to motor-complete SCI. Methods: Sixteen adults with motor-complete SCI below T2 level and duration of paraplegia greater than 3 months were included. Oxygen consumption (VO$_2$), caloric expenditure, and heart rate were measured at rest and while participants performed lower body dressing (LBD), pop-over transfers (POTs), and manual wheelchair propulsion (MWP) at a self-selected pace. These data were used to calculate energy expenditure in standard metabolic equivalents (METs), as defined by 1 MET = 3.5 mL O$_2$/kg/min, and in SCI METs using the conversion 1 SCI MET = 2.7 mL O$_2$/kg/min. Results: VO$_2$ at rest was 3.0 +/- 0.9 mL O$_2$/kg/min, which equated to 0.9 +/- 0.3 standard METs and 1.1 +/- 0.4 SCI METs in energy expenditure. LBD required 3.2 +/- 0.7 METs and 4.1 +/- 0.9 SCI METs; POTs required 3.4 +/- 1.0 METs and 4.5 +/- 1.3 SCI METs; and MWP required 2.4 +/- 0.6 METs and 3.1 +/- 0.7 SCI METs. Conclusion: Resting VO$_2$ for adults with motor-complete paraplegia is 3.0 mL O$_2$/kg/min, which is lower
than standard resting Vo$_2$ in able-bodied individuals. Progressively more energy is required to perform MWP, LBD, and POTs, respectively. Use of the standard METs formula may underestimate the level of intensity an individual with SCI uses to perform physical activities.

**Publication type:** Journal: Article  
**Source:** EMBASE  
**Full text:** Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

13. **Title:** Evaluation of 3 pushrim-activated power-assisted wheelchairs in patients with spinal cord injury  
**Citation:** Archives of Physical Medicine and Rehabilitation, May 2015, vol./is. 96/5(894-904), 0003-9993;1532-821X (01 May 2015)  
**Author(s):** Guillon B., Van-Hecke G., Iddir J., Pellegrini N., Beghoul N., Vaugier I., Figere M., Pradon D., Lofaso F.  
**Language:** English  
**Abstract:** Objective To assess differences between manual wheelchairs and 3 pushrim-activated power-assisted wheelchairs (PAPAWs): Servomatic A and B and E-motion. Design Repeated measures. Setting Rehabilitation hospital. Participants Volunteers with spinal cord injuries (N=52). Interventions Ten subjects propelled the wheelchairs on a dynamometer, 46 evaluated each wheelchair on indoor and outdoor courses, and 10 evaluated their ability to transfer themselves and their wheelchairs into and out of their car. Main Outcome Measures Oxygen consumption per unit time (VETMo$<$2$>$) and heart rate were measured during propulsion on the dynamometer. Wheelchair efficiency on the indoor and outdoor courses was evaluated on the basis of heart rate, completion time, handrim push frequency, and patient satisfaction. Results On the dynamometer, decreases in VETMo$<$2$>$ and heart rate were similar with the 3 PAPAWs compared with manual wheelchairs. On the outdoor course, heart rate was significantly decreased by PAPAWs compared with manual wheelchairs and patient satisfaction was better with Servomatic devices than with the E-motion device. Indoors, the course completion time was longer with the E-motion wheelchair than with other wheelchairs in the overall population, and handrim push frequency was higher with the E-motion wheelchair than with other wheelchairs in the subgroup with T12 to L1 injuries. Car transfer ability was lower with PAPAWs than with manual wheelchairs. Conclusions Differences exist across PAPAWs. Compared with E-motion, the 2 Servomatic PAPAWs were easier to use outdoors, and difficulty transferring into/out of the car was similarly increased with all 3 PAPAWs.  
**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

14. **Title:** Exercise after spinal cord injury as an agent for neuroprotection, regeneration and rehabilitation.  
**Citation:** Brain Research, Apr 2015, (Apr 9, 2015), 0006-8993 (Apr 9, 2015)  
**Author(s):** Sandrow-Feinberg, Harra R., Houlé, John D.  
**Abstract:** Spinal cord injury (SCI) is a traumatic event from which there is limited recovery of function, despite the best efforts of many investigators to devise realistic therapeutic treatments. Partly this is due to the multifaceted nature of SCI, where there is considerable disarray and dysfunction secondary to the initial injury. Contributing to this secondary degeneration is neurotoxicity, vascular dysfunction, glial scarring, neuroinflammation, apoptosis and demyelination. It seems logical that addressing the need for neuroprotection, regeneration and rehabilitation will require different treatment strategies that may be applied at varied stages of the post-injury response. Here we focus on a single strategy, exercise/physical training, which appears to have multiple applications and benefits for an acute or chronic SCI. Exercise has been demonstrated to be advantageous at cellular and biochemical levels, as well as being of benefit for the whole animal or human subject. Data from our lab and others will be discussed to further elucidate the many positive aspects of implementing exercise following injury and to suggest that rehabilitation is not the sole target of a training regimen following SCI. This article is part of a Special Issue entitled SI: Spinal cord injury. (PsycINFO Database Record (c) 2015 APA, all rights reserved)(journal abstract)  
**Source:** PsycInfo

15. **Title:** Experiences of participation in everyday occupations among persons aging with a tetraplegia.  
**Citation:** Disability & Rehabilitation, 01 June 2015, vol./is. 37/11(951-957), 09638288  
**Author(s):** Lundström, Ulrica, Lilja, Margareta, Gray, David, Isaksson, Gunilla  
**Language:** English  
**Abstract:** Purpose: This study aimed to gain understanding of participation in everyday occupations through life
stories of persons aging with a traumatic spinal cord injury (SCI). Method: A narrative method was used for data collection and a paradigmatic analysis was used to analyze data. Results: The analysis resulted in three themes that illustrate how the participants acted to participate in everyday occupations, how that changed over time, and some concerns about their future. The first theme illustrates how participants following SCI acted to become agents of their lives and participate in everyday occupations. The second theme illustrates how participants had to prioritize participation in meaningful occupations due to personal and environmental factors. The third theme shows how they had to try new strategies to continue participation in occupations, due to secondary health complications related to aging. Conclusions: This study captures how persons aging with tetraplegia acted to participate in everyday occupations from soon after the injury until several decades later. In addition, their ability to act and participate changed over time. Our findings provide knowledge that can guide clinicians in their work within this complex area of rehabilitation. Besides, it can also guide the work with policy recommendations for healthcare and social service systems.

**Publication type:** journal article  
**Source:** CINAHL

16. **Title:** From demyelination to remyelination: The road toward therapies for spinal cord injury  
**Citation:** GLIA, July 2015, vol./is. 63/7(1101-1125), 0894-1491;1098-1136 (01 Jul 2015)  
**Author(s):** Papastefanaki F., Matsas R.  
**Language:** English  
**Abstract:** Myelin integrity is crucial for central nervous system (CNS) physiology while its preservation and regeneration after spinal cord injury (SCI) is key to functional restoration. Disturbance of nodal organization acutely after SCI exposes the axon and triggers conduction block in the absence of overt demyelination. Oligodendrocyte (OL) loss and myelin degradation follow as a consequence of secondary damage. Here, we provide an overview of the major biological events and underlying mechanisms leading to OL death and demyelination and discuss strategies to restrain these processes. Another aspect which is critical for SCI repair is the enhancement of endogenously occurring spontaneous remyelination. Recent findings have unveiled the complex roles of innate and adaptive immune responses in remyelination and the immunoregulatory potential of the glial scar. Moreover, the intimate crosstalk between neuronal activity, oligodendrogenesis and myelination emphasizes the contribution of rehabilitation to functional recovery. With a view toward clinical applications, several therapeutic strategies have been devised to target SCI pathology, including genetic manipulation, administration of small therapeutic molecules, immunomodulation, manipulation of the glial scar and cell transplantation. The implementation of new tools such as cellular reprogramming for conversion of one somatic cell type to another or the use of nanotechnology and tissue engineering products provides additional opportunities for SCI repair. Given the complexity of the spinal cord tissue after injury, it is becoming apparent that combinatorial strategies are needed to rescue OLs and myelin at early stages after SCI and support remyelination, paving the way toward clinical translation. GLIA 2015;63:1101-1125 Main Points: Disruption of myelin architecture triggers conduction block while oligodendrocyte (OL) death and demyelination amplifies functional loss after spinal cord injury OL and myelin protection stall progression of pathology while remyelination contributes to functional restoration.  
**Publication type:** Journal: Review  
**Source:** EMBASE

17. **Title:** Human embryonic stem cells in the treatment of patients with spinal cord injury  
**Citation:** Annals of Neurosciences, 2015, vol./is. 22/4(208-216), 0972-7531;0976-3260 (2015)  
**Author(s):** Shroff G., Gupta R.  
**Language:** English  
**Abstract:** Background: Spinal cord injury (SCI) is a neurological condition which paralyses the patient below the level of injury and could occur due to damage, infection and tumors. Presently, there is no cure for SCI. The treatment options used for SCI include corticosteroid (methylprednisolone sodium succinate), surgical interventions, and physiotherapy and lowering of body temperature. The research on treatment options for SCI has been shifted to cell-based therapies. Use of human embryonic stem cells (hESCs) have been explored in animal models in which these cells have been found to hold a potential to repair and regenerate. Purpose: We wanted to assess the safety and efficacy of hESCs in the treatment of patients with spinal cord injury. Methods: Five patients who were either paraplegic or quadriplegic were treated with hESC therapy. Results: Following the treatment, all patients showed significant improvement in their sitting balance, control and sensation of bowel and bladder, power and movement of limbs (lower limbs and upper limbs). No adverse events were reported. Conclusion: In conclusion, hESC is safe and effective therapy for SCI.  
**Publication type:** Journal: Article
18. Title: Lower extremity strength is correlated with walking function after incomplete SCI
Citation: Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(133-139), 1082-0744;1945-5763 (01 Mar 2015)
Author(s): DiPiro N.D., Holthaus K.D., Morgan P.J., Embry A.E., Perry L.A., Bowden M.G., Gregory C.M.
Language: English
Abstract: Background: Lower extremity strength has been reported to relate to walking ability, however, the relationship between voluntary lower extremity muscle function as measured by isokinetic dynamometry and walking have not been thoroughly examined in individuals with incomplete spinal cord injury (iSCI). Objective: To determine the extent to which measures of maximal voluntary isometric contraction (MVIC) and rate of torque development (RTD) in the knee extensor (KE) and plantar flexor (PF) muscle groups correlate with self-selected overground walking speed and spatiotemporal characteristics of walking. Methods: Twenty-two subjects with chronic (≥6 months) iSCI participated in a cross-sectional study. Values for MVIC and RTD in the KE and PF muscle groups were determined by isokinetic dynamometry. Walking speed and spatiotemporal characteristics of walking were measured during overground walking. Results: MVIC in the KE and PF muscle groups correlated significantly with walking speed. RTD was significantly correlated with walking speed in both muscle groups, the more-involved PF muscle group showing the strongest correlation with walking speed (r = 0.728). RTD in the KE and PF muscle groups of the more-involved limb was significantly correlated with single support time of the more-involved limb. Conclusion: These data demonstrate that lower extremity strength is associated with walking ability after iSCI. Correlations for the muscle groups of the move-involved side were stronger compared to the less-involved limb. In addition, PF function is highlighted as a potential limiting factor to walking speed along with the importance of RTD.
Publication type: Journal: Article
Source: EMBASE
Full text: Available Topics in Spinal Cord Injury Rehabilitation at Topics in Spinal Cord Injury Rehabilitation

19. Title: Mediating effects of social support and self-concept on depressive symptoms in adults with spinal cord injury.
Citation: Spinal Cord, 01 May 2015, vol./is. 53/5(413-416), 13624393
Language: English
Abstract: Study design: Cross-sectional, correlational design. Objectives: To examine the effects of individual demographics, activities of daily living, social support, and self-concept on depressive symptoms in people with spinal cord injury (SCI). Setting: A convenience sample of 135 adults with SCI was recruited from medical and rehabilitation centres in Taiwan. Methods: Face-to-face, structured interviews were employed to collect information. Study questionnaires included a demographic sheet, the Barthel scale, the modified Social Support Inventory, the Huang self-concept scale and the Beck Depression Inventory. Data were analysed by structural equation modelling (SEM). Results: The average age of the participants was 43.3 years (±11.98), the mean duration of injury was 114 months (±93.78), and most were males. Emotional support (r=-0.173, P<0.05) and appraisal support (r=-0.261, P<0.01) were negatively correlated with depressive symptoms. The best fitted SEM model included individual demographics and physical function, social support and self-concept as significant predictors of depressive symptoms, with self-concept acting as a mediator in this relationship. Participants’ characteristics and social support both contributed substantial indirect effects on depressive symptoms via self-concept. Self-concept also mediated the relationship between education, income, physical functioning and participants’ depressive symptoms. Conclusion: For this sample, the more negative that individuals perceived themselves, the more likely they were to report worsening depressive symptoms. The more social support that individuals have, the more likely they were to report less depressive symptoms. Further longitudinal research will help clarify the direction of these relationships.
Publication type: journal article
Source: CINAHL
Full text: Available Nature Publishing Group at Spinal Cord

20. Title: Neural Markers of Neuropathic Pain Associated with Maladaptive Plasticity in Spinal Cord Injury
Citation: Pain Practice, April 2015, vol./is. 15/4(371-377), 1530-7085;1533-2500 (01 Apr 2015)
Author(s): Pascoal-Faria P., Yalcin N., Fregni F.
Language: English
Abstract: Objectives: 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). Methods: 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. Results: 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. Conclusions: 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.

Publication type: Journal: Article
Source: EMBASE

21. Title: Neurogenic Bowel After Spinal Cord Injury From the Perspective of Support Providers: A Phenomenological Study
Citation: PM and R, April 2015, vol./is. 7/4(407-416), 1934-1482 (01 Apr 2015)
Author(s): Burns A.S., St-Germain D., Connolly M., Delparte J.J., Guindon A., Hitzig S.L., Craven B.C.
Language: English
Abstract: Objective: To gain greater insight into the experience of support providers who assist and support individuals with spinal cord injury (SCI) for the performance of bowel care. Design: Qualitative (phenomenological) interviews and analysis. Setting: Community. Participants: Ten support providers of individuals with SCI. Main Outcome Measurements: Themes related to supporting bowel care for individuals with SCI. Results: Support providers identified concerns and challenges as well as sources of satisfaction related to the provision of bowel care to individuals with SCI. Traits and characteristics of effective support providers also emerged. Conclusions: Individuals with SCI often require emotional, logistical, and/or physical assistance to complete bowel care. Exploration of neurogenic bowel care from the perspective of support providers identified concerns and challenges, sources of satisfaction, and important traits and characteristics of support providers. This information can facilitate the identification of effective support providers and the provision of enhanced training and support. Interventions of this nature can improve the experience for individuals with SCI and their supports.
Publication type: Journal: Article
Source: EMBASE

22. Title: Novel risk factors associated with current suicidal ideation and lifetime suicide attempts in individuals with spinal cord injury
Citation: Archives of Physical Medicine and Rehabilitation, May 2015, vol./is. 96/5(799-808), 0003-9993;1532-821X (01 May 2015)
Language: English
Abstract: Abstract Objective: To determine unique associations of suicidal ideation (SI) and lifetime suicide attempts (SAs) in individuals with spinal cord injury (SCI). Design: Cross-sectional analysis. Setting: Outpatient. Participants: Individuals with SCI (N=2533) who were 18 years or older with a history of traumatic SCI. Interventions: None. Main Outcome Measures: Any SI in the past 2 weeks (9-item Patient Health Questionnaire) and any lifetime SA. Results: Three-hundred twenty-three individuals (13.3%) reported SI in the past 2 weeks and 179 (7.4%) reported lifetime SA. After controlling for other factors, both lifetime SA and current SI were associated with study site and current level of depression. In addition, SA was associated with less education, younger age at injury, having current or past treatment of depression, and having bipolar disorder or schizophrenia. SI was associated with more years since injury and lifetime SA. Several psychological factors were associated with current SI and lifetime SAs, including lower environmental reward and less positive affect. In addition, control of one's community activities and spiritual well-being were associated with current SI. In bivariate comparisons, severity of SCI was also associated with the 47% of the SAs that occurred after injury. Conclusions: Several unique associations of SI and lifetime SA in individuals with SCI were identified, including level of environmental reward and control, spiritual well-being, and severity of SCI.
These factors bear further investigation as prospective risk factors for suicidal behavior after SCI.

**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

### 23. Title: Outcomes of neurogenic bowel management in individuals living with a spinal cord injury for at least 10 years

**Citation:** Archives of Physical Medicine and Rehabilitation, May 2015, vol./is. 96/5(905-912), 0003-9993;1532-821X (01 May 2015)  
**Author(s):** Adriaansen J.J., Van Asbeck F.W., Van Kuppevelt D., Snoek G.J., Post M.W.  
**Language:** English  
**Abstract:** Objective To describe bowel management and its outcomes in individuals living with a spinal cord injury (SCI) for at least 10 years. Design Cross-sectional multicenter study. Setting Dutch community. Participants Individuals (N=258; age range, 28-65y) who acquired their SCI between 18 and 35 years of age, who were at least 10 years post-SCI, and who used a wheelchair for their daily mobility. Interventions Not applicable. Main Outcome Measures The International SCI Bowel Function Basic Data Set, the neurogenic bowel dysfunction (NBD) score, and a single item on satisfaction with bowel management. Results Mean time since injury (TSI) was 24+/−9 years. Seventy-four percent used >1 conservative bowel management method, specifically digital evacuation (35%) and mini enemas (31%). Transanal irrigation (TAI) and surgical interventions were used by 11% and 8%, respectively. Perianal problems were reported by 45% of the participants. Severe NBD was present in 36% of all participants and in 40% of those using a conservative method. However, only 14% were (very) dissatisfied with their current bowel management. Dissatisfaction with bowel management was significantly associated with constipation and severe NBD. With increasing TSI, there was a nonsignificant trend observed toward a decline in dissatisfaction with bowel management and a significant decline in severe NBD. Conclusions Although satisfaction rates were high, more than a third of the participants reported severe NBD and perianal problems. Apart from severe NBD, there were no significant associations between bowel problems and TSI. Conservative methods were most often used, but some of these methods were also significantly associated with the presence of severe NBD. Longitudinal research is necessary to provide more knowledge concerning the course of NBD with increasing TSI.

**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

### 24. Title: Patterns in Wheeled Mobility Skills Training, Equipment Evaluation, and Utilization: Findings from the SCIRehab Project.

**Citation:** Assistive Technology, 01 June 2015, vol./is. 27/2(59-68), 10400435  
**Author(s):** Taylor, Sally, Gassaway, Julie, Heisler-Varriale, Lauren A., Kozlowski, Allan, Teeter, Laura, Labarbera, Jacqueline, Vargas, Carolyn, Natale, Audrey, Swirsky, Alison  
**Language:** English  
**Abstract:** Patients with traumatic spinal cord injury (SCI) participate in manual and power wheelchair (WC) skills training during inpatient rehabilitation; wheeled mobility evaluations aim to optimize use, fit, and function of equipment following discharge. Occupational and physical therapists documented treatment sessions during inpatient rehabilitation to describe types and quantity of WC skills training and adaptive equipment (AE) provided by neurological level of injury. Most patients participated in WC skills training; variation in type and frequency exists. Propulsion/driving skills were practiced most frequently. A majority of patients participated in equipment evaluations; assessment/prescription and fitting were performed frequently; mat evaluations were done infrequently. Most patients received mobility equipment in a timely manner; they continued to use their WC and were satisfied with its fit and function at the one-year injury anniversary. High levels of respondent satisfaction with fit and function of WCs suggest clinicians are prescribing mobility devices adequately and accurately supplementing information obtained during equipment assessment and fitting sessions with information from general treatment sessions. Variation in type and frequency of WC training provided by level of SCI and in types of WC prescribed use provides a foundation for future research to relate treatment modalities with functional and participation outcomes.
25. Title: Perceptions of practice guidelines for people with spinal cord injury
Citation: Rehabilitation Nursing: The official journal of the Association of Rehabilitation Nurses, March 2015, vol./is. 40/2(100-110), 0278-4807 (01 Mar 2015)
Author(s): Powell-Cope G., Moore D.H., Weaver F.M., Thomason S.
Language: English
Abstract: PURPOSE: The Consortium for Spinal Cord Medicine published clinical practice guidelines (CPG) related to upper limb (UL) preservation in people with spinal cord injury (SCI) in 2005. The purpose of this qualitative research was to identify stakeholder agreement with recommendations, performance gaps, and barriers and facilitators to CPG implementation. DESIGN: This 6-month study focused on the perspectives of healthcare providers, veterans, and key informants. The Promoting Action on Research Implementation in Health Services (PARiHS) was used to frame the interview questions, analyze data from focus groups and interviews, and develop conclusions and recommendations. METHOD: SCI Centers at the Tampa, Seattle, and Hines Veterans' hospitals participated. The purposeful sample for the focus groups included 32 healthcare providers, 21 veterans with SCI, and 3 key informants. Analysis of qualitative data netted the percent of agreement with recommendations, performance gaps, and strategies for CPG implementation. FINDINGS: Content analysis of focus group data revealed that healthcare providers agreed or partially agreed with 20 (57%) of the 35 CSCM CPG on UL preservation of function. Agreement ranged from 100% for assessment to 28% for equipment use. Barriers for implementation related to administrative and system issues. CONCLUSION: Consideration of gaps, barriers, and facilitators to implementation will assist clinicians to target interventions to preserve UL function.

Publication type: Journal: Article
Source: EMBASE

26. Title: Prospective study of barriers to discharge from a spinal cord injury rehabilitation unit.
Citation: Spinal Cord, 01 May 2015, vol./is. 53/5(358-362), 13624393
Author(s): New, P W
Language: English
Abstract: Study design: Prospective open cohort case series of consecutive patients admitted with spinal cord damage to a spinal rehabilitation unit (SRU) between 1 January 2008 and 31 July 2013. Objectives: Measure the prevalence of barriers to discharge, their reasons and resulting additional unnecessary days in hospital. Setting: SRU, Victoria, Australia. Methods: Consecutive SRU admissions had prospective documentation of key clinical and demographic characteristics, the occurrence of any discharge barrier, the cause(s) and duration of unnecessary hospitalisation. Results: There were 235 patients in the study; 138 (58.7%) were male and the median age was 63 years. Eighty-six (36.6%) patients had a discharge barrier. The most common reasons for a discharge barrier were: waiting for approval for long-term and supported care or services, residential care, home modifications, family deliberations regarding discharge planning and the provision of equipment necessary for discharge. The reasons accounting for the greatest number of additional hospital days were: home modifications, residential care, equipment necessary for discharge, waiting for approval for long-term and supported care or services and accommodation for people unable to return to their previous residence without readily available alternatives. Over the study period 17.5% (3176/18 184) of all bed-days were occupied by patients deemed to be clinically ready for discharge from the SRU but who had a discharge barrier. Conclusions: Barriers to discharge from rehabilitation for patients with spinal cord damage are common, substantial, and represent an important opportunity for health systems improvement.

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

27. Title: Protection and repair after spinal cord injury: Accomplishments and future directions
Citation: Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(174-187), 1082-0744;1945-5763 (01 Mar 2015)
Author(s): Dietrich W.D.
Language: English
Abstract: It was an honor for me to present the 2014 G. Heiner Sell Memorial Lecture at the annual American Spinal Injury Association (ASIA) meeting in San Antonio. For this purpose, I provided a comprehensive review of the scope of research targeting discovery and translational and clinical investigations into spinal cord injury (SCI) research.
Indeed, these are exciting times in the area of spinal cord research and clinical initiatives. Many laboratories and clinical programs throughout the world are publishing data related to the pathophysiology of SCI and new strategies for protecting and promoting recovery in both animal models and humans. For this lecture, several topics were discussed including neuroprotective and reparative strategies, neurorehabilitation, quality of life issues, and future directions. In the area of neuroprotection, pathophysiological events that may be targeted with therapeutic strategies, including pharmacological and targeted temperature management were reviewed. For reparative approaches, the importance of both intrinsic and extrinsic mechanisms of axonal regeneration was highlighted. Various cell therapies currently being tested in preclinical and clinical arenas were reviewed as well as ongoing US Food and Drug Administration approved trials for SCI patients. Neurorehabilitation is an evolving research field with locomotive training strategies, electrical stimulation, and brain-machine interface programs targeting various types of SCI. The importance of testing combination approaches including neuroprotective, reparative, and rehabilitative strategies to maximize recovery mechanisms was therefore emphasized. Finally, quality of life issues that affect thousands of individuals living with paralysis were also presented. Future directions and specific obstacles that require attention as we continue to move the SCI field forward were discussed.

**Publication type:** Journal: Article

**Source:** EMBASE

**Full text:** Available *Topics in Spinal Cord Injury Rehabilitation* at [Topics in Spinal Cord Injury Rehabilitation](http://www.tipsicri.org/)

**28. Title:** Recent advances in the pharmacologic treatment of spinal cord injury.

**Citation:** Metabolic Brain Disease, Apr 2015, vol. 30, no. 2, p. 473-482, 0885-7490 (Apr 2015)

**Author(s):** Cox, April, Varma, Abhay, Banik, Naren

**Abstract:** A need exists for the effective treatment of individuals suffering from spinal cord injury (SCI). Recent advances in the understanding of the pathophysiological mechanisms occurring in SCI have resulted in an expansion of new therapeutic targets. This review summarizes both preclinical and clinical findings investigating the mechanisms and cognate pharmacologic therapeutics targeted to modulate hypoxia, ischemia, excitotoxicity, inflammation, apoptosis, epigenetic alterations, myelin regeneration and scar remodeling. Successful modulation of these targets has been demonstrated in both preclinical and clinical studies with agents such as Oxycyte, Minocycline, Riluzole, Premarin, Cethrin, and ATI-355. The translation of these agents into clinical studies highlights the progress the field has made in the past decade. SCI proves to be a complex condition; the numerous pathophysiological mechanisms occurring at varying time points suggests that a single agent approach to the treatment of SCI may not be optimal. As the field continues to mature, the hope is that the knowledge gained from these studies will be applied to the development of an effective multi-pronged treatment strategy for SCI. (PsycINFO Database Record (c) 2015 APA, all rights reserved)(journal abstract)

**Source:** PsycInfo

**29. Title:** Reliability of surface EMG as an assessment tool for trunk activity and potential to determine neurorecovery in SCI.

**Citation:** Spinal Cord, 01 May 2015, vol./is. 53/5(368-374), 13624393

**Author(s):** Mitchell, M D, Yarossi, M B, Pierce, D N, Garbarini, E L, Forrest, G F

**Language:** English

**Abstract:** Study Design:Reliability and validity study. Objective:This study investigates the responsiveness and reliability of the brain motor control assessment (BMCA) as a standardized neurophysiological assessment tool to: (i) characterize trunk neural activity in neurologically-intact controls; (ii) measure and quantify neurorecovery of trunk after spinal cord injury (SCI). Setting: Kessler Foundation Research Center, West Orange, NJ. Methods: A standardized BMCA protocol was performed to measure surface electromyography (sEMG) recordings for seven bilateral trunk muscles on 15 able-bodied controls during six maneuvers (inhalation, exhalation, neck flexion, jendrassik, unilateral grip). Additionally, sEMG recordings were analyzed for one chronic SCI individual before electrical stimulation (ES), after ES of the lower extremities while supine, and after active stand training using body-weight support with bilateral ES. sEMG recordings were collected on bilateral erector spinae, internal and external obliques, upper and middle trapezius, biceps and triceps. For each maneuver a voluntary response index was calculated: incorporating the magnitude of sEMG signal and a similarity index (SI), which quantifies the distribution of activity across all muscles. Results: Among all maneuvers, the SI presented reproducible assessment of trunk-motor function within (ICC: 0.860-0.997) and among (P>0.22) able-bodied individuals. In addition, potential changes were measured in a chronic SCI individual after undergoing two intensive ES protocols. Conclusion: The BMCA provides reproducible characterization of trunk activity in able-bodied individuals, lending credence for its use in neurophysiological assessment of motor control. Additionally, the BMCA as an assessment tool to measure neurorecovery in an individual with chronic SCI after intense ES interventions was demonstrated.


Author(s): Angel, Sanne

Abstract: Having a partner is a strong factor in adaptation to the new life situation with a spinal cord injury (SCI). Still, more knowledge in detail about the partner's influences according to the experiences of individuals with SCI could contribute to the understanding of the situation after an injury. The aim of this phenomenological-hermeneutic article is to achieve a deeper understanding of nine individuals' experiences the first 2 years after SCI. In rehabilitation after SCI, the partner supported the SCI individual's life spirit by not giving up and by still seeing possibilities in the future. The partner reinforced the SCI individual's commitment to life by sharing experiences; providing love, trust, and hope; and giving priority to the best things in life for the SCI individual. This implied cohabitation providing concrete help and an intimacy that helped to cope with problems and anxieties and allowed SCI individuals the ability to self-realize. This promoted feelings of profound gratitude but also dependency. Thus, the SCI individual benefitted from the partner's support mentally and physically, which enabled a life that would not otherwise be possible.

Source: Medline

31. Title: Sulfonylureas—A novel treatment to reduce tissue damage after acute spinal cord injury?

Citation: The Lancet Neurology, Apr 2015, vol. 14, no. 4, p. 352-, 1474-4422 (Apr 2015)

Author(s): Kunte, Hagen, Farhadi, H. Francis, Sheth, Kevin N., Simard, J. Marc, Kronenberg, Golo

Abstract: Comments on an article by Leanne M. Ramer et al. (see record 2014-48887-021). Ramer et al. gives an excellent overview of best practices and promising new research directions for treatment of spinal cord injury (SCI). The authors would like to add the following new angle on this crucial matter: the sulfonylurea receptor 1–transient receptor potential melastatin 4 (SUR1–TRPM4) channel is upregulated within hours of SCI at the site of the lesion. After CNS injury, the SUR1–TRPM4 channel has been detected in neurons, astrocytes, oligodendrocytes, and microvascular endothelium at the site of injury. Ramer et al. reference a promising recent phase I trial of riluzole in acute SCI. It is worth mentioning that, among other effects, riluzole blocks TRPM4. Furthermore, results of a study of severe spinal cord injury in rats showed superiority of glibenclamide over the glutamatergic neurotransmission blocker riluzole regarding complex motor functions, tissue sparing at 6 weeks, and toxicity. Clearly, the SUR1–TRPM4 channel deserves further investigation as a drug target in SCI. (PsycINFO Database Record (c) 2015 APA, all rights reserved)

Source: PsycInfo

32. Title: Surgical compared with nonsurgical management of fractures in male veterans with chronic spinal cord injury.

Citation: Spinal Cord, 01 May 2015, vol./is. 53/5(402-407), 13624393

Author(s): Bethel, M, Bailey, L, Weaver, F, Le, B, Burns, S P, Svircev, J N, Heggeness, M H, Carbone, L D

Language: English

Abstract: Study design: Retrospective review of a clinical database. Objectives: To examine treatment modalities of incident appendicular fractures in men with chronic SCI and mortality outcomes by treatment modality. Setting: United States Veterans Health Administration Healthcare System. Methods: This was an observational study of 1979 incident fractures that occurred over 6 years among 12 162 male veterans with traumatic SCI of at least 2 years duration from the Veterans Health Administration (VA) Spinal Cord Dysfunction Registry. Treatment modalities were classified as surgical or nonsurgical treatment. Mortality outcomes at 1 year following the incident fracture were determined by treatment modality. Results: A total of 1281 male veterans with 1979 incident fractures met inclusion criteria for the study. These fractures included 345 (17.4%) upper-extremity fractures and 1634 (82.6%) lower-extremity fractures. A minority of patients (9.4%) were treated with surgery. Amputations and disarticulations accounted for 19.7% of all surgeries (1.3% of all fractures), and the majority of these were done more than 6 weeks following the incident fracture. There were no significant differences in mortality among men with fractures treated surgically compared with those treated nonsurgically. Conclusions: Currently, the majority of appendicular fractures in male patients with chronic SCI are managed nonsurgically within the VA health-care system. There is no difference in mortality by type of treatment.
33. Title: The association between spinal cord injury and acute myocardial infarction in a nationwide population-based cohort study

Citation: Spine, 2015, vol./is. 40/3(147-152), 0362-2436;1528-1159 (2015)

Author(s): Yang T.-Y., Chen H.-J., Sung F.-C., Kao C.-H.

Language: English

Abstract: Study Design: A spinal cord injury (SCI) retrospective cohort study was derived from the National Health Insurance Research Database of Taiwan. Objective: We evaluated risk of acute myocardial infarction (AMI) in patients newly diagnosed with SCI. Summary of Background Data: According to information of the World Health Organization, cardiovascular diseases are the most frequent causes of death in patients with SCI compared with those in the general population. Methods: We obtained claims data from the National Health Insurance Research Database for this cohort study. The SCI group comprised 22,197 patients with a diagnosis of SCI. Case and control patients were based on risk-set sampling in a 1:4 ratio, and we excluded patients with a prior diagnosis of AMI. Comorbidities were categorized as the proportion of prior illnesses in the SCI and non-SCI groups. We used the Cox proportion model to explore adjusted hazard ratio (aHR) for developing AMI between case and control patients. Results: Patients with SCI were significantly more likely to exhibit pre-existing illnesses associated with AMI than patients without SCI. Patients with a diagnosis of SCI exhibited significantly higher aHRs for developing AMI than patients without SCI (aHR = 1.17; P < 0.05). Patients with SCI, compared with patients without SCI, were associated with a subsequent AMI risk (aHR = 1.17; P < 0.05). Several comorbidities, such as cardiovascular disease (aHR = 1.29; P < 0.05), chronic obstructive pulmonary disease (aHR = 1.51; P < 0.05), hypertension (aHR = 1.34; P < 0.01), and renal disease (aHR = 1.76; P < 0.05), were associated with an increased AMI risk. Furthermore, T-spine SCI was significantly associated with an AMI risk (aHR = 1.38; P < 0.05). Conclusion: Patients with a diagnosis of SCI exhibited an increased risk of AMI compared with patients without SCI. These findings have broad implications for surveillance among patients with SCI, and future studies should evaluate whether risk factor modification can decrease AMI risk among patients with SCI.

Publication type: Journal: Article

Source: EMBASE

Full text: Available Ovid at Spine

34. Title: The impact of living in a care home on the health and wellbeing of spinal cord injured people

Citation: International Journal of Environmental Research and Public Health, April 2015, vol./is. 12/4(4185-4202), 1661-7827;1660-4601 (15 Apr 2015)

Author(s): Smith B., Caddick N.

Language: English

Abstract: In the UK, 20% of people with spinal cord injury (SCI) are discharged from rehabilitation into an elderly care home. Despite this, and knowledge that the home is central to health and wellbeing, little research has examined the impact of being in care homes on the health and wellbeing of people with SCI. The purpose of this study was to address this gap. Twenty adults who lived in care homes or had done so recently for over two years were interviewed in-depth. Qualitative data were analyzed using inductive thematic analysis. Analyses revealed that living in a care home environment severely damages quality of life, physical health and psychological wellbeing in the short and long-term. Reasons why quality of life, health, and wellbeing were damaged are identified. These included a lack of freedom, control, and flexibility, inability to participate in community life, inability to sustain relationships, safety problems, restricted participation in work and leisure time physical activity, lack of meaning, self-expression, and a future, loneliness, difficulties with the re-housing process, depression, and suicidal thoughts and actions. It is concluded that for people with SCI, the care home environment violates social dignity, is oppressive, and denies human rights. Implications for housing and health care policies are also offered.

Publication type: Journal: Article

Source: EMBASE

Full text: Available ProQuest at International Journal of Environmental Research and Public Health

35. Title: The interaction of cortico-spinal pathways and sacral sphincter reflexes in subjects with incomplete spinal cord injury: A pilot study

Citation: Neuourology and Urodynamics, April 2015, vol./is. 34/4(349-355), 0733-2467;1520-6777 (01 Apr 2015)
36. Title: Time and effort required by persons with spinal cord injury to learn to use a powered exoskeleton for assisted walking

Citation: Topics in Spinal Cord Injury Rehabilitation, March 2015, vol./is. 21/2(110-121), 1082-0744;1945-5763 (01 Mar 2015)

Author(s): Kozlowski A.J., Bryce T.N., Dijkers M.P.

Abstract: Background: Powered exoskeletons have been demonstrated as being safe for persons with spinal cord injury (SCI), but little is known about how users learn to manage these devices. Objective: To quantify the time and effort required by persons with SCI to learn to use an exoskeleton for assisted walking. Methods: A convenience sample was enrolled to learn to use the first-generation Ekso powered exoskeleton to walk. Participants were given up to 24 weekly sessions of instruction. Data were collected on assistance level, walking distance and speed, heart rate, perceived exertion, and adverse events. Time and effort was quantified by the number of sessions required for participants to stand up, walk for 30 minutes, and sit down, initially with minimal and subsequently with contact guard assistance. Results: Of 22 enrolled participants, 9 screen-failed, and 7 had complete data. All of these 7 were men; 2 had tetraplegia and 5 had motor-complete injuries. Of these, 5 participants could stand, walk, and sit with contact guard or close supervision assistance, and 2 required minimal to moderate assistance. Walk times ranged from 28 to 94 minutes with average speeds ranging from 0.11 to 0.21 m/s. For all participants, heart rate changes and reported perceived exertion were consistent with light to moderate exercise. Conclusion: This study provides preliminary evidence that persons with neurological weakness due to SCI can learn to walk with little or no assistance and light to somewhat hard perceived exertion using a powered exoskeleton. Persons with different severities of injury, including those with motor complete C7 tetraplegia and motor incomplete C4 tetraplegia, may be able to learn to use this device.

Publication type: Journal: Article

Source: EMBASE

37. Title: Trunk control impairment is responsible for postural instability during quiet sitting in individuals with cervical spinal cord injury.

Citation: Clinical Biomechanics, 01 June 2015, vol./is. 30/5(507-512), 02680033

Author(s): Milosevic, Matija, Masani, Kei, Kuipers, Meredith J., Rahouni, Hossein, Verrier, Mary C., McConville, Kristiina M.V., Popovic, Milos R.

Abstract: Background: Individuals with cervical spinal cord injury usually sustain impairments to the trunk and upper and lower limbs, resulting in compromised sitting balance. The objectives of this study were to: 1) compare postural control of individuals with cervical spinal cord injury and able-bodied individuals; and 2) investigate the effects of foot support and trunk fluctuations on postural control during sitting balance. Methods: Ten able-bodied individuals and six individuals with cervical spinal cord injury were asked to sit quietly during two 60 s trials. The forces exerted...
on the seat and the foot support surfaces were measured separately using two force plates. The global centre of pressure sway was obtained from the measurements on the two force plates, and the sway for each force plate was calculated individually. Findings Individuals with spinal cord injury had at least twice as large global and seat sways compared to able-bodied individuals, while foot support sway was not significantly different between the two groups. Comparison between global and seat sways showed that anterior–posterior velocity of global sway was larger compared to the seat sway in both groups. Interpretation Postural control of individuals with cervical spinal cord injury was worse than that of able-bodied individuals. The trunk swayed more in individuals with spinal cord injury, while the stabilization effect of the feet did not differ between the groups. Foot support affected anterior–posterior fluctuations in both groups equally. Thus, trunk control is the dominant mechanism contributing to sitting balance in both able-bodied and spinal cord injury individuals.

**Publication type:** journal article

**Source:** CINAHL

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