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Interventions and Management

1. *Dev Med Child Neurol.* 2012 May 12. doi: 10.1111/j.1469-8749.2012.04307.x. [Epub ahead of print]

Interrater reliability and convergent validity of the American Academy for Cerebral Palsy and Developmental Medicine methodology for conducting systematic reviews.

Wiat L, Kolaski K, Butler C, Vogtle L, Logan LR, Hickman R, Romeiser J, Samson-Fang L, Matsuba CA, Baird MW, Roxborough L, Mayson T, Dinu I.

Glenrose Rehabilitation Hospital, Edmonton, AB; Department of Physical Therapy, Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, AB, Canada. Department of Orthopedics and Pediatrics, Wake Forest University School of Medicine, Winston-Salem, NC; Department of Special Education, Seattle Public Schools (retired), Seattle, WA; Department of Occupational Therapy, University of Alabama, Birmingham, AL; Department of Physical Medicine and Rehabilitation, Upstate Medical University, Syracuse, NY; Department of Physical Therapy, University of Nevada, Las Vegas, NV; Department of Surgery, Stony Brook University, Stony Brook, NY; Division of General Pediatrics, Department of Pediatrics, University of Utah, Salt Lake City, UT, USA. Department of Pediatrics, University of British Columbia, Vancouver, BC, Canada. Division of Pediatric Physical Medicine and Rehabilitation, Akron Children's Hospital, Akron, OH, USA. Sunny Hill Health Centre for Children, Vancouver, BC; Therapy Department and Shriners' Gait Lab, Sunny Hill Health Centre for Children, Vancouver, BC; Department of Public Health Sciences School of Public Health, University of Alberta, Edmonton, AB, Canada.

Aim: The aim of this study was to evaluate the interrater reliability and convergent validity of the American Academy for Cerebral Palsy and Developmental Medicine's (AAPDM) methodology for conducting systematic reviews (group design studies). **Method:** Four clinicians independently rated 24 articles for the level of evidence and conduct using AAPDM methodology. Study conduct was also assessed using the Effective Public Health Practice Project scale. Raters were randomly assigned to one of two pairs to resolve discrepancies. The level of agreement between individual raters and pairs was calculated using kappa ($\alpha=0.05$) and intraclass correlations (ICCs; $\alpha=0.05$). Spearman's rank correlation coefficient was calculated to evaluate the relationship between raters' categorization of quality categories using the two tools. **Results:** There was acceptable agreement between raters ($\kappa=0.77$; $p<0.001$; $ICC=0.90$) and between assigned pairs ($\kappa=0.83$; $p<0.001$; $ICC=0.96$) for the level of evidence ratings. There was acceptable agreement between pairs for four of the seven conduct questions ($\kappa=0.53-0.87$). ICCs (all raters) for conduct category ratings (weak, moderate, and strong) also indicated good agreement ($ICC=0.76$). Spearman's rho indicated a significant positive correlation for the overall quality category comparisons of the two tools (0.52 ; $p<0.001$). **Conclusions:** The AAPDM rating system has acceptable interrater reliability. Evaluation of its study quality ratings demonstrated reasonable agreement when compared with a similar tool.

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[PMID: 22577944](#) [PubMed - as supplied by publisher]

2. J Pediatr Orthop. 2012 Jun;32(4):423-31.

Rasch analysis of the pediatric outcomes data collection instrument in 720 patients with cerebral palsy.

Seok Park M, Youb Chung C, Min Lee K, Hyuk Sung K, Choi IH, Cho TJ, Yoo WJ, Lee SH, Kwon DG, Kim TW.

*Department of Orthopaedic Surgery, Seoul National University Bundang Hospital ‡Department of Orthopaedic Surgery, Dongguk University Ilsan Hospital, Kyungki †Department of Orthopaedic Surgery, Seoul National University Children's Hospital, Seoul §Department of Orthopaedic Surgery, In Ha University Hospital, Incheon, Korea.

BACKGROUND: The Pediatric Outcomes Data Collection Instrument (PODCI) was originally developed to carry out a functional assessment of children and adolescents (including patients with cerebral palsy), focusing on musculoskeletal health. Validated questionnaires are important for assessing the functional outcome of cerebral palsy, and are meant to have unidimensionality, proper item gap, no ceiling and floor effects, and no item redundancy. The advances in health measurements have led to the application of Rasch analysis to assess questionnaires. This study evaluated PODCI in patients with cerebral palsy using Rasch analyses. **METHODS:** The study included a total of 720 patients with Gross Motor Function Classification System level I to III, 192 with unilateral involvement and 528 with bilateral involvement. Rasch analysis was performed to obtain information on (1) the information weight fit statistic to assess the unidimensionality and redundancy of the items in each domain; (2) average item calibration to detect the item separation; and (3) item map to evaluate the ceiling and floor effects. **RESULTS:** The PODCI worked best in the sports/physical function domain. In information weight fit statistics, there were 4 items violating unidimensionality, which included "putting on his/her coat" in transfer/basic mobility and "getting together and do things with friends" in sports/physical function. There were 4 items with item redundancy. Inadequate item separation was observed in the transfer/basic mobility domain. A ceiling effect was found in all domains, except for the sports/physical function. **CONCLUSIONS:** The sports/physical function domain in PODCI generally satisfies the requirements of Rasch item response theory and is an appropriate measure of the function in cerebral palsy. Although some individual items do not fit well, the PODCI can be improved by eliminating the redundant items and by adding more difficult tasks to fill in the gaps.

LEVEL OF EVIDENCE: Level II.

[PMID: 22584846](#) [PubMed - in process]

3. J Child Neurol. 2012 May 10. [Epub ahead of print]

Unimanual and Bimanual Intensive Training in Children With Hemiplegic Cerebral Palsy and Persistence in Time of Hand Function Improvement: 6-Month Follow-Up Results of a Multisite Clinical Trial.

Fedrizzi E, Rosa-Rizzotto M, Turconi AC, Pagliano E, Fazzi E, Visonà Dalla Pozza L, Facchin P; GIPCI Study Group.

This study aims to compare in hemiplegic children the effectiveness of intensive training (unimanual and bimanual) versus standard treatment in improving hand function, assessing the persistence after 6 months. A multicenter, prospective, cluster-randomized controlled clinical trial was designed comparing 2 groups of children with hemiplegic cerebral palsy, treated for 10 weeks (3 h/d 7 d/wk; first with unimanual constraint-induced movement therapy, second with intensive bimanual training) with a standard treatment group. Children were assessed before and after treatment and at 3 and 6 months postintervention using Quality of Upper Extremity Skills Test (QUEST) and Besta Scales. One hundred five children were recruited (39 constraint-induced movement therapy, 33 intensive bimanual training, 33 standard treatment). Constraint-induced movement therapy and intensive bimanual training groups had significantly improved hand function, showing constant increase in time. Grasp improved immediately and significantly with constraint-induced movement therapy, and with bimanual training grasp improved gradually, reaching the same result. In both, spontaneous hand use increased in long-term assessment.

[PMID: 22580904](#) [PubMed - as supplied by publisher]

4. Nature. 2012 May 16;485(7398):372-5. doi: 10.1038/nature11076.**Reach and grasp by people with tetraplegia using a neurally controlled robotic arm.**

Hochberg LR, Bacher D, Jarosiewicz B, Masse NY, Simeral JD, Vogel J, Haddadin S, Liu J, Cash SS, van der Smagt P, Donoghue JP.

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Paralysis following spinal cord injury, brainstem stroke, amyotrophic lateral sclerosis and other disorders can disconnect the brain from the body, eliminating the ability to perform volitional movements. A neural interface system could restore mobility and independence for people with paralysis by translating neuronal activity directly into control signals for assistive devices. We have previously shown that people with long-standing tetraplegia can use a neural interface system to move and click a computer cursor and to control physical devices. Able-bodied monkeys have used a neural interface system to control a robotic arm, but it is unknown whether people with profound upper extremity paralysis or limb loss could use cortical neuronal ensemble signals to direct useful arm actions. Here we demonstrate the ability of two people with long-standing tetraplegia to use neural interface system-based control of a robotic arm to perform three-dimensional reach and grasp movements. Participants controlled the arm and hand over a broad space without explicit training, using signals decoded from a small, local population of motor cortex (MI) neurons recorded from a 96-channel microelectrode array. One of the study participants, implanted with the sensor 5 years earlier, also used a robotic arm to drink coffee from a bottle. Although robotic reach and grasp actions were not as fast or accurate as those of an able-bodied person, our results demonstrate the feasibility for people with tetraplegia, years after injury to the central nervous system, to recreate useful multidimensional control of complex devices directly from a small sample of neural signals.

Comment in

Nature. 2012;485(7398):317-8.

[PMID: 22596161](#) [PubMed - in process]

5. Dev Neurorehabil. 2012;15(3):219-22.**Parent goals as outcome measures for children receiving treadmill training: A series of case reports.**

Mayson TA, Ward VJ, Harris SR.

Therapy Department & Shriners Gait Lab, Sunny Hill Health Centre for Children , Vancouver, BC , Canada.

Background: This series of case reports examined attainment of parents' goals for children receiving treadmill training and parents' satisfaction with goal attainment. Methods: Four children with cerebral palsy completed 5-8 weeks of standardized training while wearing a body weight support harness. Outcome measures were family goals using goal attainment scaling (GAS): a score of 0 equaled goal attainment, scores of -2 and -1 represented lower-than-expected performance and +1 and +2 exceeded expected performance. Parent satisfaction with goal attainment was assessed on a Likert scale from 1 (very satisfied) to 5 (very unsatisfied). Results: All participants achieved GAS levels of ≥ 0 , indicating all goals were met. All parents rated their satisfaction with goal attainment as 'very satisfied'. Conclusion: This is the first report using family goals as outcome measures to assess effects of treadmill training. Future studies of treadmill training should include family- and child-centred goals as potential outcomes.

[PMID: 22582853](#) [PubMed - in process]

6. Dev Med Child Neurol. 2012 May 14. doi: 10.1111/j.1469-8749.2012.04321.x. [Epub ahead of print]**The PEDALS stationary cycling intervention and health-related quality of life in children with cerebral palsy: a randomized controlled trial.**

Demuth SK, Knutson LM, Fowler EG.

Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, CA; Department of Physical Therapy (retired), Missouri State University, Springfield, MO; Department of Orthopaedic Surgery, Tarjan Center, UCLA/Orthopaedic Hospital Center for Cerebral Palsy, University of California, Los Angeles, CA, USA.

Aim: The aim of this study was to assess health-related quality of life (HRQOL) following a stationary cycling intervention in children with cerebral palsy (CP). **Method:** This was a phase I multisite randomized controlled trial with single blinding. HRQOL was evaluated using the Pediatric Quality of Life Inventory SF15 (PedsQL; children) and Pediatric Outcomes Data Collection Instrument (PODCI; parent proxy) before and after a 3-month stationary cycling intervention. Sixty-two children (29 male, 33 female; mean age 11y; range 7-18y) with spastic diplegic CP, classified as levels I to III on the Gross Motor Function Classification System, were enrolled. Paired and independent t-tests were used to evaluate within- and between-group differences respectively. **Results:** Between-group differences, favoring the cycling group, were found for PedsQL emotional functioning ($p=0.046$) and Parental PODCI treatment expectations scores ($p=0.006$). Between-group differences were not found for other scales. Within-group improvements were found in the cycling group: PedsQL total score (+5.8; $p=0.006$), psychosocial health summary (+6.9; $p=0.008$), and school functioning (+8.0; $p=0.038$). PODCI satisfaction with symptoms decreased significantly only in the control group (-12.0; $p=0.046$). **Interpretation:** A beneficial influence of exercise on pediatric emotional well-being and parental treatment expectations was found. The evidence was not strong for other aspects of HRQOL. Results support the positive relationship between physical fitness and emotional well-being in the general population. A child's perception is important when examining change in his or her emotional well-being due to intervention.

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[PMID: 22582760](#) [PubMed - as supplied by publisher]**7. BMC Pediatr. 2012 May 16;12(1):53. [Epub ahead of print]****Static balance and function in children with cerebral palsy submitted to neuromuscular block and neuromuscular electrical stimulation: Study protocol for prospective, randomized, controlled trial.**

Kazon S, Grecco LA, Pasini H, Corrêa JC, Christovão TC, de Carvalho PD, Giannasi LC, Lucareli PR, de Oliveira LV, Salgado AS, Sampaio LM, Oliveira CS.

BACKGROUND: The use of botulinum toxin A (BT-A) for the treatment of lower limb spasticity is common in children with cerebral palsy (CP). Following the administration of BT-A, physical therapy plays a fundamental role in potentiating the functionality of the child. The balance deficit found in children with CP is mainly caused by muscle imbalance (spastic agonist and weak antagonist). Neuromuscular electrical stimulation (NMES) is a promising therapeutic modality for muscle strengthening in this population. The aim of the present study is to describe a protocol for a study aimed at analyzing the effects of NMES on dorsiflexors combined with physical therapy on static and functional balance in children with CP submitted to BT-A. **METHODS:** Protocol for a prospective, randomized, controlled trial with a blinded evaluator. Eligible participants will be children with cerebral palsy (Levels I, II and III of the Gross Motor Function Classification System) between five and 12 years of age, with independent gait with or without a gait-assistance device. All participants will receive BT-A in the lower limbs (triceps surae). The children will then be randomly allocated for either treatment with motor physical therapy combined with NMES on the tibialis anterior or motor physical therapy alone. The participants will be evaluated on three occasions: 1) one week prior to the administration of BT-A; 2) one week after the administration of BT-A; and 3) four months after the administration of BT-A (end of intervention). Spasticity will be assessed by the Modified Ashworth Scale and Modified Tardieu Scale. Static balance will be assessed using the Medicauteurs Fusyo pressure platform and functional balance will be assessed using the Berg Balance Scale. **DISCUSSION:** The aim of this protocol study is to describe the methodology of a randomized, controlled, clinical trial comparing the effect of motor physical therapy combined with NMES on the tibialis anterior muscle or motor physical therapy alone on static and functional

balance in children with CP submitted to BT-A in the lower limbs. This study describes the background, hypotheses, methodology of the procedures and measurement of the results. Trial registration RBR5qzs8h.

[PMID: 22591446](#) [PubMed - as supplied by publisher]

8. Rev Bras Fisioter. 2012 Apr;16(2):134-140.

Correlation among the Visual Gait Assessment Scale, Edinburgh Visual Gait Scale and Observational Gait Scale in children with spastic diplegic cerebral palsy [Article in English, Portuguese]

Bella GP, Rodrigues NB, Valenciano PJ, Silva LM, Souza RC.

Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, SP, Brasil.

BACKGROUND: Gait disorders are very common in children with spastic diplegia cerebral palsy (CP). In order to improve the CP children's gait and to quantify the outcomes of this intervention it becomes essential to perform an instrumented analysis before and after the intervention. **OBJECTIVES:** To analyze the correlation among the Edinburgh Visual Gait Scale (EVGS), the Visual Gait Assessment Scale (VGAS) and the Observational Gait Scale (OGS). **METHODS:** Cross sectional study aiming to analyze the gait of 8 children with spastic diplegia CP with level I or II in the Gross Motor Function Classification System (GMFCS) through the EVGS, VGAS and OGS scales performed by 3 examiners. This study was approved by the Research Ethics Committee of the Universidade Estadual de Campinas (UNICAMP). Weighted Kappa scores were used to analyze the data considering a significance level of 5%. **RESULTS:** The intra-rater analyses showed a moderate to excellent agreement ($k=0.41, 1.00$) among the methods of the children's classification, being the comparison between VGAS and the EVGS scales presented the highest level of agreement, while the OGS scale presented a considerable disagreement in comparison with other scales. The inter-rater agreement showed to be predominantly high. **CONCLUSIONS:** The results provide evidence that the VGAS and the EVGS scales are more suitable for children's spastic diplegia CP gait assessment when compared to OGS.

[PMID: 22584771](#) [PubMed - as supplied by publisher]

9. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub. 2012 Mar;156(1):41-7.

Estimation of botulinum toxin type A efficacy on spasticity and functional outcome in children with spastic cerebral palsy.

Colovic H, Dimitrijevic L, Stankovic I, Nikolic D, Radovic-Janosevic D.

Clinic for Physical Therapy and Rehabilitation, Clinical Centre of Nis, Nis, Serbia. ninacol40@ymail.com.

Aim. We evaluated the effects of botulinum toxin type A (BTA) - abobotulinumtoxinA on passive motion resistance (PMR) values of lower limbs affected muscles and on the functional motor status in children with spastic cerebral palsy (CP). **Methods.** In Group I (28 lower limbs with spastic muscles), and in Group II (14 lower limbs with dynamic spastic equinus) BTA was administered. Physical therapy was prescribed for 16 weeks. We estimated PMR using the Modified Ashworth Scale. Achieved functional motor level was evaluated by Gross Motor Function Classification System (GMFCS) and Gross Motor Function Measure (GMFM). Parameters were assessed before treatment and after 3, 8, 16 weeks and 6 months respectively. **Results.** In Group I, PMR was significantly lower for hip adductors and knee extensors over 3-16 weeks, and for ankle joint extensors in both groups. There were significant differences for both groups in frequencies of GMFCS values after 16 weeks from BTA application. There was a significant increase in GMFM scores after 8 and 16 weeks from BTA application in both groups of patients. **Conclusions.** BTA treatment in CP children is followed by reduction in PMR values and improvement in functional motor status.

[PMID: 22580859](#) [PubMed - in process]

10. Clin Orthop Relat Res. 2012 Apr;470(4):1236-7; author reply 1238-9.**Letter to the editor: Surgical technique: Medial column arthrodesis in rigid spastic planovalgus feet.**

Fang Z.

Comment on

Clin Orthop Relat Res. 2012 May;470(5):1334-43.

[PMID: 22274727](#) [PubMed - indexed for MEDLINE] PMID: PMC3293968 [Available on 2013/4/1]**11. BMC Musculoskelet Disord. 2012 May 15;13(1):71. [Epub ahead of print]****Effects of neuromuscular electrical stimulation, laser therapy and LED therapy on the masticatory system and the impact on sleep variables in cerebral palsy patients: a randomized, five arms clinical trial.**

Giannasi LC Dr, Matsui MT Dr, Batista SR Prof, Hardt CT Prof, Gomes CP Prof, Amorim JB Dr, Aguiar IC Prof, Collange L Prof, Oliveira EF Prof, Santos IR Prof, Dias IS Prof, Nassif SR Prof, Oliveira CS Dr, Oliveira LV Dr, Gomes MF Dr.

BACKGROUND: Few studies demonstrate effectiveness of therapies for oral rehabilitation of patients with cerebral palsy (CP), given the difficulties in chewing, swallowing and speech, besides the intellectual, sensory and social limitations. Due to upper airway obstruction, they are also vulnerable to sleep disorders. This study aims to assess the sleep variables, through polysomnography, and masticatory dynamics, using electromyography, before and after neuromuscular electrical stimulation, associated or not with low power laser (Gallium Arsenide- Aluminum, = 780nm) and LED (= 660 nm) irradiation in CP patients. **Methods/Design:** 50 patients with CP, both gender, aged between 19 and 60 years will be enrolled in this study. The inclusion criteria are: voluntary participation, patient with hemiparesis, quadriplegia or diparetic CP, with ability to understand and respond to verbal commands. The exclusion criteria are: patients undergoing / underwent orthodontic, functional maxillary orthopedic or botulinum toxin treatment. Polysomnographic and surface electromyographic exams on masseter, temporalis and suprahyoid will be carry out in all sample. Questionnaire assessing oral characteristics will be applied. The sample will be divided into 5 treatment groups: Group 1: neuromuscular electrical stimulation; Group 2: laser therapy; Group 3: LED therapy; Group 4: neuromuscular electrical stimulation and laser therapy and Group 5: neuromuscular electrical stimulation and LED therapy. All patients will be treated during 8 consecutive weeks. After treatment, polysomnographic and electromyographic exams will be collected again. **Discussion:** This paper describes a five arm clinical trial assessing the examination of sleep quality and masticatory function in patients with CP under non-invasive therapies.

[PMID: 22587485](#) [PubMed - as supplied by publisher]**12. Dev Med Child Neurol. 2012 May 14. doi: 10.1111/j.1469-8749.2012.04302.x. [Epub ahead of print]****Clinimetrics of measures of oropharyngeal dysphagia for preschool children with cerebral palsy and neurodevelopmental disabilities: a systematic review.**

Benfer KA, Weir KA, Boyd RN.

Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine; Queensland Children's Medical Research Centre, The University of Queensland, Brisbane, QLD, Australia.

Aim: The aim of this study was to determine the psychometric properties and clinical utility of objective measures of oropharyngeal dysphagia (OPD) in children with cerebral palsy or neurodevelopmental disabilities aged 12 months to 5 years. **Method:** Five electronic databases were searched to identify measures of OPD. The Consensus-based Standards for the Selection of Measurement Instruments (COSMIN) Checklist was used to assess psychometric properties and a Modified CanChild Outcome Rating Form was used for clinical utility. **Results:** Nine measures of OPD from 27 papers were assessed: the Brief Assessment of Motor Function - Oral Motor Deglutition Scale; the Behavioral Assessment Scale of Oral Functions in Feeding; the Dysphagia Disorders Survey; the Feeding

Behaviour Scale; the Functional Feeding Assessment, modified; the Gisel Video Assessment; the Oral Motor Assessment Scale; the Pre-Speech Assessment Scale; and the Schedule for Oral Motor Assessment. Interpretation: The Schedule for Oral Motor Assessment and the Functional Feeding Assessment, modified, proved to be the strongest measures based on published psychometric properties of validity and reliability. The Schedule for Oral Motor Assessment and the Dysphagia Disorders Survey were found to have the strongest clinical utility. Further studies to test the psychometric properties of existing measures, in particular predictive validity, responsiveness, and test-retest reliability, would be beneficial for selecting an appropriate measure for both clinical and research contexts.

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13. Assist Technol. 2011 Spring;24(1):34-44.

Supporting the communication, language, and literacy development of children with complex communication needs: state of the science and future research priorities.

Light J, McNaughton D.

Department of Communication Sciences and Disorders, The Pennsylvania State University, University Park, Pennsylvania 16802, USA.

Children with complex communication needs (CCN) resulting from autism spectrum disorders, cerebral palsy, Down syndrome and other disabilities are severely restricted in their participation in educational, vocational, family, and community environments. There is a substantial body of research that demonstrates convincingly that children with CCN derive substantial benefits from augmentative and alternative communication (AAC) in their development of communication, language and literacy skills, with no risk to their speech development. Future research must address two significant challenges in order to maximize outcomes for children with CCN: (1) investigating how to improve the design of AAC apps/technologies so as to better meet the breadth of communication needs for the diverse population of children with CCN; and (2) ensuring the effective translation of these evidence-based AAC interventions to the everyday lives of children with CCN so that the possible becomes the probable. This article considers each of these challenges in turn, summarizing the state of the science as well as directions for future research and development.

[PMID: 22590798](#) [PubMed - in process]

14. Case Rep Pediatr. 2012;2012:317862. Epub 2012 Jan 11.

Tracheostomy wound myiasis in a child: case report and review of the literature.

Blejter J.

Pediatric Surgery Service, Sanatorio Trinidad de Quilmes, Provincia de Buenos Aires, B1878CBI Quilmes, Argentina.

An 8-year-old tracheostomized, gastrostomized, and with cerebral palsy boy was admitted for tracheostomy wound myiasis and cellulitis. Ether was applied in the wound, and then all the accessible larvae were removed. Antibiotic therapy was initiated. The procedure had to be repeated three more times to extract all the larvae. An airway endoscopy was performed and ruled out the presence of larvae in the airway, as well as any damage to the wall of the trachea. The patient recovered uneventfully and was discharged.

[PMID: 22606531](#) [PubMed - in process]

15. BMC Pediatr. 2012 May 15;12(1):51. [Epub ahead of print]**Longitudinal Evaluation of Transition Services ("LETS Study"): Protocol for outcome evaluation.**

Tsybina I, Kingsnorth S, Maxwell J, Bayley M, Lindsay S, McKeever P, Colantonio A, Hamdani Y, Healy H, Macarthur C.

BACKGROUND: Because of advances in medical treatment, most children with physical disabilities can expect to achieve near normal life spans. Typically, coordinated teams of health care providers in specialized pediatric settings care for these children. As these children reach adulthood, however, the availability of services and expertise changes because the adult health care system has different processes designed to meet their specialized needs. Gaps in continuity of care during the transition from pediatric to adult services, and associated poor health outcomes are well documented. In response, new models of care are being introduced to address the complex process of health care transition. This paper describes a study protocol of a client-centered, prospective, longitudinal, mixed-method evaluation of linked model of health care across the lifespan (the LIFEspan Model), offered by a pediatric rehabilitation center and an adult rehabilitation center. **METHOD:** This project will include a process and an outcome evaluation of the LIFEspan Model. The process evaluation will detail the specific service delivery that occurs with respect to preparation for transition and transfer of care through chart audits of pediatric medical records and qualitative interviews with LIFEspan staff. The outcome evaluation will measure the effect of the model on: 1) maintaining continuity within the health care system from pediatric to adult care; and 2) secondary outcomes related to health, well-being, social participation, transition readiness, and health care utilization of youth with cerebral palsy and acquired brain injury. Standardized instruments will include Health Utilities Inventory, Assessment of Life Habits, Arc's Self-Determination, Assessment of Health-Related Quality of Life, Partners in Health Questionnaire, Social Support Questionnaire, and Self-Efficacy for Managing Chronic Disease. **DISCUSSION:** The LETS study will be original in its undertaking of a prospective examination of outcomes 1-year post-transition, use of multiple comparison groups, and absence of disability-related exclusion criteria ensuring that the transition experiences of varied populations of young people and their families will be represented. Trial registration www.clinicaltrials.gov, ID NCT00975338.

[PMID: 22587415](#) [PubMed - as supplied by publisher]

16. J Paediatr Child Health. 2012 May 15. doi: 10.1111/j.1440-1754.2012.02479.x. [Epub ahead of print]**Public Services for Children with Special Needs: Discrimination by Diagnosis.**

Badawi N.

Macquarie Group Foundation Professor of Cerebral Palsy, CP Alliance, Notre Dame University, Sydney University, Sydney, Australia.

[PMID: 22583033](#) [PubMed - as supplied by publisher]

17. Dev Neurorehabil. 2012;15(3):178-84.**Repetitive/restricted behaviours and interests in children with cerebral palsy and autism spectrum disorder.**

Hattier MA, Matson JL, May AC, Whiting SE.

Department of Psychology, Louisiana State University, Baton Rouge, LA, USA.

Objective: To inspect the presence and severity of deficits in restricted and/or repetitive behaviours and interests (RRBIs) in children with cerebral palsy (CP) and autism spectrum disorders (ASDs). **Methods:** Children studied (18-35 months of age) belonged to one of three diagnostic groups: children with CP and autism (n = 11), children with CP and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS; n = 10) and children with a sole diagnosis of CP (n = 15). A one-way, between subjects ANOVA was conducted on the Repetitive Behaviour/Restricted Interests domain of the Baby and Infant Screen for Autism Traits-Part 1 (BISCUIT-Part 1) and followed up with post-hoc tests. Percentage endorsements were also calculated for each item of this domain. **Results:**

Children with CP + autism had significantly greater impairment. No significant differences were found between the CP + PDD-NOS and the CP alone groups. Conclusion: The implications of these findings are discussed.

[PMID: 22582848](#) [PubMed - in process]

18. J Autism Dev Disord. 2012 May 17. [Epub ahead of print]

Treatments for Neurodevelopmental Disorders: Evidence, Advocacy, and the Internet.

Di Pietro NC, Whiteley L, Mizgalewicz A, Illes J.

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The Internet is a major source of health-related information for parents of sick children despite concerns surrounding quality. For neurodevelopmental disorders, the websites of advocacy groups are a largely unexamined source of information. We evaluated treatment information posted on nine highly-trafficked advocacy websites for autism, cerebral palsy, and fetal alcohol spectrum disorder. We found that the majority of claims about treatment safety and efficacy were unsubstantiated. Instead, a range of rhetorical strategies were used to imply scientific support. When peer-reviewed publications were cited, 20 % were incorrect or irrelevant. We call for new partnerships between advocacy and experts in developmental disorders to ensure better accuracy and higher transparency about how treatment information is selected and evidenced on advocacy websites.

[PMID: 22592952](#) [PubMed - as supplied by publisher]

19. J Head Trauma Rehabil. 2012 May 14. [Epub ahead of print]

A Systematic Review of Parenting Interventions for Traumatic Brain Injury: Child and Parent Outcomes.

Louise Brown F, Whittingham K, Boyd R, Sofronoff K.

School of Psychology (Ms Brown, Drs Whittingham and Sofronoff); Queensland Cerebral Palsy and Rehabilitation Research Centre, School of Medicine (Ms Brown and Drs Whittingham and Boyd); and The Queensland Children's Medical Research Institute (Ms Brown and Drs Whittingham and Boyd), The University of Queensland, Brisbane, Australia.

OBJECTIVE: To evaluate the efficacy of parenting interventions on child and parent behavioral and emotional outcomes for parents of children with traumatic brain injury (TBI). **METHODS:** Systematic searches of 5 databases. Included studies were assessed for quality, and relevant data were extracted and collated. **RESULTS:** Eight articles met inclusion criteria, reporting 6 trials of interventions involving parent training for parents of children with TBI. Only 1 pre-post study trialed a version of a traditional parenting intervention. The remaining studies involved a multicomponent family problem-solving intervention. Each trial found a statistically significant intervention effect for at least 1 outcome measure. **CONCLUSIONS:** Interventions that train parents may be a useful approach to alleviate behavioral and emotional disturbances after pediatric TBI. Some evidence suggests that these interventions may help to improve parenting skill and adjustment. However, all identified studies included interventions with multiple treatment components, so the effects attributable to parent training alone remain undetermined. Further quality trials are needed to assess the unique effectiveness of parenting interventions in this population.

[PMID: 22588359](#) [PubMed - as supplied by publisher]

20. Clin Orthop Relat Res. 2012 May;470(5):1249-51.

Biographical sketch: William John Little, FRCS (1810-1894).

Brand RA.

Clinical Orthopaedics and Related Research, 1600 Spruce Street, Philadelphia, PA 19103, USA.

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This biographical sketch on William Little corresponds to the historic text, *The Classic: Hospital for the Cure of Deformities: Course of Lectures on the Deformities of the Human Frame* (1843), available at DOI 10.1007/s11999-012-2302-y .

[PMID: 22383021](#) [PubMed - indexed for MEDLINE] PMID: PMC3314775 [Available on 2013/5/1]

21. Clin Orthop Relat Res. 2012 May;470(5):1252-6.

The classic: Hospital for the cure of deformities: course of lectures on the deformities of the human frame. 1843.

Little WJ.

This Classic Article is a reprint of the original work by W.J. Little, *Hospital for the Cure of Deformities: Course of Lectures on the Deformities of the Human Frame*. An accompanying biographical sketch of W.J. Little is available at DOI 10.1007/s11999-012-2301-z . The Classic Article is ©1843 and is reprinted courtesy of Elsevier from Little WJ. *Hospital for the Cure of Deformities: course of lectures on the deformities of the human frame*. *Lancet*. 1843;41:350-354.

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Prevention and Cure

22. Dev Med Child Neurol. 2012 May 12. doi: 10.1111/j.1469-8749.2012.04331.x. [Epub ahead of print]

Cerebral palsy and birth defects: what is the frame of reference?

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23. Dev Med Child Neurol. 2012 May 12. doi: 10.1111/j.1469-8749.2012.04309.x. [Epub ahead of print]

Congenital non-central nervous system malformations in cerebral palsy: a distinct subset?

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Aim: The aim of this article was to identify and contrast the subset of children with cerebral palsy (CP) and non-central nervous system (CNS) congenital malformations with children with CP but no coexisting non-CNS congenital malformations. **Method:** A population-based regional comprehensive CP registry was used to identify children with CP who had non-CNS congenital malformations (n=34; 19 males, 15 females; 22 classified as Gross Motor Function Classification System [GMFCS] levels I-III, 12 as GMFCS level IV or V). Their clinical features were then compared with other children with CP without non-CNS congenital malformations (n=207; 115 males, 92 females; 138 classified as GMFCS levels I-III, 69 as GMFCS level IV or V). **Results:** Children with CP and non-CNS congenital malformations did not differ from those without in terms of neurological subtype distribution or functional severity, as measured by the GMFCS. Also, there was no association with previous maternal infections (i.e.

toxoplasmosis, rubella, cytomegalovirus, herpes simplex virus 2 [TORCH]), maternal fever, use of illicit substances, asphyxia, neonatal encephalopathy, intraventricular haemorrhage, or septicaemia. The incidence of comorbidities such as convulsions, communication difficulties, gavage feeding, cortical blindness, and auditory impairment was not higher in this subgroup. Interpretation: The incidence of congenital non-CNS malformations among children with CP is appreciable. Children with these non-CNS malformations do not appear to differ from other children with CP regarding neurological subtype, functional severity, and comorbidities, or maternal or obstetrical factors. Thus, the specific presence of a non-CNS congenital malformation does not appear to assist the practitioner in the management or understanding of a child's CP.

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24. Dev Neurorehabil. 2012;15(1):39-43.

Partial motor restoration upon administration of sildenafil: a case study.

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OBJECTIVE: Extensive research in the past decade has confirmed that the adult brain maintains some plasticity, including neural cell birth, migration and integration. Pre-clinical data strongly suggest that phosphodiesterase type 5 (PDE5) inhibitors promote cerebral neovascularization and neurogenesis. Animal studies of cerebral stroke suggest potential regenerative benefits following treatment with sildenafil citrate, a PDE5 inhibitor. This study reports a case in which compassionate use of sildenafil was investigated as a treatment to improve physical functioning, more than 4 decades after development of spastic quadriplegia during the 1st-2nd year of life. **METHODS:** Sildenafil 100 mg was administered every 24 hours for 7 months. **RESULTS:** Sildenafil treatment was associated with clinical (functional) improvement. **CONCLUSIONS:** The activity of sildenafil on cerebral neovascularization and neurogenesis may be the mechanism for the observed functional benefits.

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25. Eur J Paediatr Neurol. 2012 May 14. [Epub ahead of print]

Timing of external ventricular drainage and neurodevelopmental outcome in preterm infants with posthemorrhagic hydrocephalus.

Bassan H, Eshel R, Golan I, Kohelet D, Ben Sira L, Mandel D, Levi L, Constantini S, Beni-Adani L; for the External Ventricular Drainage Study Investigators.

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OBJECTIVE: To delineate the impact of early (≤ 25 days of life) versus late (> 25 days) external ventricular drainage (EVD) on the neurodevelopmental outcome of preterm infants with posthemorrhagic hydrocephalus (PHH) following intraventricular hemorrhage (IVH). **METHODS:** We retrospectively categorized 32 premature infants with PHH into two groups according to whether they underwent early ($n = 10$) or late ($n = 22$) EVD. We administered the Battelle Developmental Inventory II and a neuromotor examination (median age, 73 months, range: 29-100). **RESULTS:** In adjusted comparisons, early EVD was associated with better scores than late EVD in adaptive (79 ± 22.6 vs. 58.8 ± 8.1 , $P = .01$), personal social (90.7 ± 26 vs. 67.3 ± 15.9 , $P = .02$), communication (95.4 ± 27.5 vs. 69.6 ± 20.5 , $P = .04$) and cognitive (78.9 ± 24.4 vs. 60.7 ± 11.5 , $P = .055$) functions. Three (30%) early EVD infants had severe (< 2.5 standard deviation) cognitive disability compared to 18 (82%) late EVD infants ($P = .03$). The incidences of cerebral palsy and neurosurgical complications were equal for the two groups. Subgroup analyses suggested that early EVD was beneficial in infants with original grade III IVH ($n = 15$, $P < 0.05$), but that it had no beneficial effects in infants with prior parenchymal injury ($n = 17$, $P = NS$). **CONCLUSION:** In this small retrospective series, early

EVD is associated with lower rates of cognitive, communication and social disabilities than later EVD in infants with PHH without prior parenchymal injury. A randomized prospective trial is warranted.

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26. Genet Test Mol Biomarkers. 2012 May 15. [Epub ahead of print]

Leiden V Factor and Spastic Cerebral Palsy in Mexican Children.

Arenas-Sordo MD, Zavala-Hernández C, Casiano-Rosas C, Reyes-Maldonado E, Ríos C, Hernández-Zamora E, Del Valle-Cabrera MG, Yamamoto-Furusko JK.

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Aim: Cerebral palsy (CP) is a persistent motor disorder that appears before the patient is 3 years old due to a nonprogressive interference in the brain's development which takes place before the central nervous system growth is complete. Causes of this have been studied, and one that has been proposed for spastic hemiparesis CP is the Leiden mutation of V factor coagulation. We want to know whether this mutation can cause CP in our population. **Materials and Methods:** We carried out a study of cases and controls with 94 patients with spastic hemiparesis CP and 120 controls as well as their mothers with their controls. **Results:** None of the patients, their mothers, or controls had the Leiden mutation; however, other risk factors were significant: hypoxia odds ratio (OR) 7.189 (2.546, 20.302) $p=0.0001$, smoking OR 16.621 (2.945, 93.818) $p=0.001$, maternal infections (urinary or vaginal) OR 7.040 (2.952, 16.789) $p=0.0001$, weeks of gestation OR 0.866 (0.7750, 0.999) $p=0.048$, and maternal age OR 1.114 (1.031, 1.204) $p=0.006$. **Conclusion:** Leiden mutation of factor V is not an important factor for our Mexican mestizo population; however, there are other important perinatal risk factors.

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27. Nat Rev Drug Discov. 2012 May 18. doi: 10.1038/nrd3758. [Epub ahead of print]

Neurological disorders: Nanoparticle opens door to cerebral palsy treatment.

Crunkhorn S.

[PMID: 22596251](#) [PubMed - as supplied by publisher]

28. Syst Rev. 2012 Mar 21;1(1):21.

Antenatal magnesium individual participant data international collaboration: assessing the benefits for babies using the best level of evidence (AMICABLE).

The AMICABLE Group.

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BACKGROUND: The primary aim of this study is to assess, using individual participant data (IPD) meta-analysis, the effects of administration of antenatal magnesium sulphate given to women at risk of preterm birth on important clinical outcomes for their child such as death and neurosensory disability. The secondary aim is to determine whether treatment effects differ depending on important pre-specified participant and treatment characteristics, such as reasons at risk of preterm birth, gestational age, or type, dose and mode of administration of magnesium sulphate. **METHODS:** **DESIGN:** The Antenatal Magnesium Individual Participant Data (IPD) International Collaboration: assessing the benefits for babies using the best level of evidence (AMICABLE) Group will perform an IPD meta-analysis to answer these important clinical questions. **SETTING/TIMELINE:** The AMICABLE Group was

formed in 2009 with data collection commencing late 2010. INCLUSION CRITERIA: Five trials involving a total 6,145 babies are eligible for inclusion in the IPD meta-analysis. PRIMARY STUDY OUTCOMES: For the infants/children: Death or cerebral palsy. For the women: Any severe maternal outcome potentially related to treatment (death, respiratory arrest or cardiac arrest). DISCUSSION: Results are expected to be publicly available in 2012.

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29. Syst Rev. 2012 Feb 12;1(1):12.

Repeat prenatal corticosteroid prior to preterm birth: a systematic review and individual participant data meta-analysis for the PRECISE study group (prenatal repeat corticosteroid international IPD study group: assessing the effects using the best level of evidence) - study protocol.

Crowther CA, Aghajafari F, Askie LM, Asztalos EV, Brocklehurst P, Bubner TK, Doyle LW, Dutta S, Garite TJ, Guinn DA, Hallman M, Hannah ME, Hardy P, Maurel K, Mazumder P, McEvoy C, Middleton PF, Murphy KE, Peltoniemi OM, Peters D, Sullivan L, Thom EA, Voysey M, Wapner RJ, Yelland L, Zhang S.

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BACKGROUND: The aim of this individual participant data (IPD) meta-analysis is to assess whether the effects of repeat prenatal corticosteroid treatment given to women at risk of preterm birth to benefit their babies are modified in a clinically meaningful way by factors related to the women or the trial protocol. **METHODS/DESIGN:** The Prenatal Repeat Corticosteroid International IPD Study Group: assessing the effects using the best level of Evidence (PRECISE) Group will conduct an IPD meta-analysis. The PRECISE International Collaborative Group was formed in 2010 and data collection commenced in 2011. Eleven trials with up to 5,000 women and 6,000 infants are eligible for the PRECISE IPD meta-analysis. The primary study outcomes for the infants will be serious neonatal outcome (defined by the PRECISE International IPD Study Group as one of death (foetal, neonatal or infant); severe respiratory disease; severe intraventricular haemorrhage (grade 3 and 4); chronic lung disease; necrotising enterocolitis; serious retinopathy of prematurity; and cystic periventricular leukomalacia); use of respiratory support (defined as mechanical ventilation or continuous positive airways pressure or other respiratory support); and birth weight (Z-scores). For the children, the primary study outcomes will be death or any neurological disability (however defined by trialists at childhood follow up and may include developmental delay or intellectual impairment (developmental quotient or intelligence quotient more than one standard deviation below the mean), cerebral palsy (abnormality of tone with motor dysfunction), blindness (for example, corrected visual acuity worse than 6/60 in the better eye) or deafness (for example, hearing loss requiring amplification or worse)). For the women, the primary outcome will be maternal sepsis (defined as chorioamnionitis; pyrexia after trial entry requiring the use of antibiotics; puerperal sepsis; intrapartum fever requiring the use of antibiotics; or postnatal pyrexia). **DISCUSSION:** Data analyses are expected to commence in 2011 with results publicly available in 2012.

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