

Monday 8 February 2010

This free weekly bulletin lists the latest research on cerebral palsy (CP), as indexed in the NCBI, PubMed (Medline) and Entrez (GenBank) databases.

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Interventions

1. Disabil Rehabil. 2010 Feb 4. [Epub ahead of print]

Body alignment and postural muscle activity at quiet standing and anteroposterior stability limits in children with spastic diplegic cerebral palsy.

Tomita H, Fujiwara K, Fukaya Y.

Department of Physical Therapy, Toyohashi SOZO University, Toyohashi, Japan.

Purpose. We investigated body alignment and muscle activity at quiet standing and anteroposterior stability limits in children with spastic diplegic cerebral palsy (SDCP). **Method.** Body alignment and electromyographic (EMG) activity of ventral and dorsal lower limb muscles at three different standing positions were compared between seven children with SDCP (SDCP(group)) and seven controls [typically developing (TD(group))]. We also compared these measurements in a child with SDCP before and after a 3-week training in which the child leant forward and maintained the forward-leaning posture with the help of a physiotherapist who manually held her lower limbs fixed in position. **Results.** In TD(group), EMG activity of the dorsal muscles increased at the extreme forward-leaning position, whereas that of the ventral muscles increased at the extreme backward-leaning position. In SDCP(group), such direction-specific increases were observed in lower leg muscles but not in thigh muscles. As a result of training, direction-specific activity in the dorsal muscles improved, and crouch posture was also improved. **Conclusions.** Our findings suggest that children with SDCP have difficulty modulating muscle activity while standing and that the quadriceps plays a critical role in maintaining crouch posture. In addition, crouch posture may be improved by the training which focuses on control of the dorsal muscles.

PMID: 20131949 [PubMed - as supplied by publisher]

2. Disabil Rehabil. 2010 Feb 4. [Epub ahead of print]

Do the self-concept and quality of life decrease in CP patients? Focussing on the predictors of self-concept and quality of life.

Soyupek F, Aktepe E, Savas S, Askin A.

Department of Physical Medicine and Rehabilitation, Suleyman Demirel University, Isparta, Turkey.

Purpose. To find out if the quality of life (QOL) and self-concept of the children with cerebral palsy (CP) was different from that of children without disability, to investigate predictive variables that could affect self-concept and QOL. **Methods.** A total of 40 children with CP and 46 age-matched peers were included. The baseline characteristics including sex, type of CP, the level of disability according to Gross Motor Function Classification System (GMFCS) were recorded. Education levels of both children and parents, demographic features of parents, features of living area, usage of devices and associated impairments were filled out. Self-concept was measured using Piers-Harris Self-concept (PH) Scale. Quality of life was measured by Pediatric Quality of Life Inventory 4.0 (PedsQL). The physical and psychosocial health subscale scores of PedsQL (P-PedsQL and PS-PedsQL) were

recorded. Results. Significant differences in mean scores favouring the control group were found for PH scale, PedsQL scale ($p < 0.001$). P-PedsQL and PS-PedsQL of the CP group were lower than the control group ($p < 0.001$). PS-PedsQL report was significant predictor of self-concept. The presence of incontinence and GMFCS level were significant predictors of PedsQL and PPedsQL, respectively. Conclusion. Self-concept and QOL of the CP children were lower than the children without CP. Presence of incontinence, self-concept rating and GMFCS level were important to predict domains of QOL.

PMID: 20131943 [PubMed - as supplied by publisher]

3. Complement Ther Clin Pract. 2010 Feb;16(1):47-51. Epub 2009 Jul 26.

Children's experiences of their participation in a training and support programme involving massage.

Powell L, Cheshire A, Swaby L.

Coventry University, Coventry CV1 5FB, UK.

This study reports on a research project that aimed to extrapolate the value of the Training and Support Programme (TSP), involving massage, among children with cerebral palsy (CP). Data gathering included information from interviews with a sub-sample of children and the TSP therapist observation forms. Data were analysed using standard thematic content analysis to identify key themes and issues of importance to children. Results showed that children enjoyed the relaxing aspects of massage and reported a number of improvements in their health such as improved muscle relaxation, mobility and bowel movements, and reduced pain. Future studies may need to explore other ways of extrapolating data from this population and similar populations where communication is impaired due to disability, but at the same time ensure that their views are listened to and acted upon. Copyright © 2009 Elsevier Ltd. All rights reserved.

PMID: 20129410 [PubMed - as supplied by publisher]

4. J Neurosurg Pediatr. 2010 Feb;5(2):195-9.

Do baclofen pumps influence the development of scoliosis in children?

Burn SC, Zeller R, Drake JM.

Divisions of Neurosurgery and.

Object: Intrathecal baclofen is an effective treatment for spasticity in patients with cerebral palsy. There has been increasing concern, however, that intrathecal baclofen may accelerate the development of scoliosis in this population. To this end, the authors reviewed their population of pediatric patients with baclofen pumps to assess the incidence of scoliosis. Methods: This was a retrospective chart and radiology review of all pediatric patients with baclofen pumps. Cobb angles were measured preoperatively and on follow-up images. Results: Of 38 patients identified, 32 had adequate data available for inclusion in the study (16 with cerebral palsy, 7 with dystonic cerebral palsy, 4 with head injury, and 5 with other diagnoses). The mean age at pump insertion was 10.6 years and the mean follow-up period was 31 months (range 1-118 months). The mean annual Cobb angle progression was 19 degrees (range 0-68 degrees, median 12 degrees). Conclusions: In the authors' group of patients there was notable development and progression of scoliosis at a greater than previously reported rate for the same patient population, and also greater than previously reported patients with intrathecal baclofen pumps. The largest possible confounding factor in this study was the insertion of the pump before skeletal maturity and therefore coinciding with the time when scoliosis may be developing naturally. A prospective study is recommended to gather further data on the development of scoliosis in this particular population with intrathecal baclofen pumps.

PMID: 20121371 [PubMed - in process]

5. Pediatrics. 2010 Feb 1. [Epub ahead of print]**Systematic Review of Interventions for Low Bone Mineral Density in Children With Cerebral Palsy.**

Hough JP, Boyd RN, Keating JL.

Victorian Paediatric Rehabilitation Service, Monash Medical Centre, Melbourne, Australia;

Aim: To systematically review the efficacy of interventions to improve low bone mineral density (LBMD) in children and adolescents with cerebral palsy (CP). **Methods:** We performed a systematic search for published randomized, controlled trials (RCTs) and controlled clinical trials (CCTs) of children with CP (aged 0-20 years, all Gross Motor Function Classification System [GMFCS] levels) who received various medical and physical interventions for LBMD compared with no intervention or standard care. Study validity was evaluated by using the Physiotherapy Evidence Database (PEDro) scale. Standardized mean differences (SMDs) were calculated when data were sufficient. **Results:** Eight of 2034 articles met the inclusion criteria (6 RCTs, 2 CCTs). There were 3 trials of bisphosphonates, one of which (Henderson RC, Lark RK, Kecskemethy HH, Miller F, Harcke HT, Bachrach SJ. *J Pediatr.* 2002;141 [5]:644-651) revealed a large and significant effect on BMD in 1 of 3 sites in the distal femur (SMD: 1.88 [95% confidence interval (CI): 0.52-3.24]). There were 3 trials of weight-bearing through varying approaches, one of which (Caulton JM, Ward KA, Alsop CW, Dunn G, Adams JE, Mughal MZ. *Arch Dis Child.* 2004;89[2]:131-135) showed a large and significant effect on the lumbar spine when increasing static standing time (SMD: 1.03 [95% CI: 0.21-1.85]). The administration of vitamin D and calcium produced a large, nonsignificant effect on BMD in the lumbar spine (Jekovec-Vrhovsek M, Kocijancic A, Prezelj J. *Dev Med Child Neurol.* 2000;42[6]:403-405) (SMD: 0.88 [95% CI: -0.07 to 1.84]). Growth hormone combined with vitamin D and/or calcium resulted in effects comparable with vitamin D and/or calcium on BMD in the lumbar spine (Ali O, Shim M, Fowler E, et al. *J Clin Endocrinol Metab.* 2007;92[3]:932-937) (SMD 0 [95% CI: -1.24 to 1.24]). **Conclusions:** Important effects on LBMD have been observed in small and diverse cohorts of children with CP. It is unclear whether small sample sizes or variable treatment responses account for nonsignificant findings. Additional large RCTs are needed of both physical and medical approaches.

PMID: 20123765 [PubMed - as supplied by publisher]

6. Dev Med Child Neurol. 2010 Jan 28. [Epub ahead of print]**Rating scales for dystonia in cerebral palsy: reliability and validity.**

Monbaliu E, Ortibus E, Roelens F, Desloovere K, Deklerck J, Prinzie P, DE Cock P, Feys H.

Department of Rehabilitation Sciences, Katholieke Universiteit Leuven, Belgium.

Aim: This study investigated the reliability and validity of the Barry-Albright Dystonia Scale (BADs), the Burke-Fahn-Marsden Movement Scale (BFMMS), and the Unified Dystonia Rating Scale (UDRS) in patients with bilateral dystonic cerebral palsy (CP). **Method:** Three raters independently scored videotapes of 10 patients (five males, five females; mean age 13y 3mo, SD 5y 2mo, range 5-22y). One patient each was classified at levels I-IV in the Gross Motor Function Classification System and six patients were classified at level V. Reliability was measured by (1) intraclass correlation coefficient (ICC) for interrater reliability, (2) standard error of measurement (SEM) and smallest detectable difference (SDD), and (3) Cronbach's alpha for internal consistency. Validity was assessed by Pearson's correlations among the three scales used and by content analysis. **Results:** Moderate to good interrater reliability was found for total scores of the three scales (ICC: BADs=0.87; BFMMS=0.86; UDRS=0.79). However, many subitems showed low reliability, in particular for the UDRS. SEM and SDD were respectively 6.36% and 17.72% for the BADs, 9.88% and 27.39% for the BFMMS, and 8.89% and 24.63% for the UDRS. High internal consistency was found. Pearson's correlations were high. Content validity showed insufficient accordance with the new CP definition and classification. **Interpretation:** Our results support the internal consistency and concurrent validity of the scales; however, taking into consideration the limitations in reliability, including the large SDD values and the content validity, further research on methods of assessment of dystonia is warranted.

PMID: 20132143 [PubMed - as supplied by publisher]

7. Dev Med Child Neurol. 2010 Jan 28. [Epub ahead of print]

The relationship between unimanual capacity and bimanual performance in children with congenital hemiplegia.

Sakzewski L, Ziviani J, Boyd R.

The University of Queensland, Queensland Cerebral Palsy and Research Rehabilitation Centre, School of Medicine, Brisbane, Australia.

Aim: This study explores the relationship between unimanual capacity and bimanual performance for children with congenital hemiplegia aged 5 to 16 years. It also examines the relationship between impairments and unimanual capacity and bimanual performance. **Method:** Participants in this cross-sectional study attended a screening assessment before participating in a large, randomized trial. They comprised 70 children with congenital hemiplegia (39 males, 31 females; mean age 10y 6mo, SD 3y); 18 were classified in the Manual Ability Classification System level I, 51 in level II, and one in level III. Eighteen were in Gross Motor Function Classification System, level I and 52 in level II. Sixty-five participants had spasticity and five had dystonia and spasticity. Fifteen typically developing children (7 males, 8 females; mean age 8y 8mo, SD 2y 7mo), matched to study participants for age and sex, were recruited as a comparison group for measures of sensation, grip strength, and movement efficiency. Outcome measures for unimanual capacity were the Melbourne Assessment of Unilateral Upper Limb Function (MUUL), and the Jebsen-Taylor Hand Function Test (JTHFT). The Assisting Hand Assessment (AHA) evaluated bimanual performance. Upper limb impairments were measured using assessments of stereognosis, moving two-point discrimination, spasticity, and grip strength. **Results:** There was a strong relationship between unimanual capacity (MUUL) and bimanual performance (AHA; $r=0.83$). Linear regression indicated MUUL and stereognosis accounted for 75% of the variance in AHA logit scores. Sensory measures were moderately correlated with unimanual capacity and bimanual performance. Age, sex, and grip strength did not significantly influence bimanual performance. There was no difference between children with right- and left-sided hemiplegia for motor performance. **Interpretation:** Findings of our study confirm a strong relationship between unimanual capacity and bimanual performance in a cohort of children with congenital hemiplegia. However, the directionality of the relationship is unknown and therapists cannot assume improvements in unimanual capacity will lead to gains in bimanual performance.

PMID: 20132142 [PubMed - as supplied by publisher]

8. Dev Med Child Neurol. 2010 Jan 28. [Epub ahead of print]

Mechanical properties of the plantarflexor musculotendinous unit during passive dorsiflexion in children with cerebral palsy compared with typically developing children.

Alhusaini AA, Crosbie J, Shepherd RB, Dean CM, Scheinberg A.

Department of Rehabilitation Sciences, College of Applied Medical Sciences, King Saud University, Riyadh, Kingdom of Saudi Arabia.

Aim: To examine the passive length-tension relations in the myotendinous components of the plantarflexor muscles of children with and without cerebral palsy (CP) under conditions excluding reflex muscle contraction. **Method:** A cross-sectional, non-interventional study was conducted in a hospital outpatient clinic. Passive torque-angle characteristics of the ankle were quantified from full plantarflexion to full available dorsiflexion in 26 independently ambulant children with CP (11 females, 15 males; mean age: 6y 11mo, range 4y 7mo-9y 7mo) and 26 age-matched typically developing children (18 females, 8 males; mean age 7y 2mo, range 4y 1mo-10y 4mo). In the children with CP, the affected (hemiplegia; $n=21$) or more affected (diplegia; $n=5$) leg was tested; in typically developing children, the leg tested was randomly selected. Gross Motor Function Classification System levels were I ($n=15$) and II ($n=11$). Care was taken to eliminate active or reflex muscle contribution to the movement, confirmed by the absence of electromyographic activity. **Results:** There were small but significant differences between the two groups for maximum ankle dorsiflexion ($p=0.003$), but large and significant differences in the torques required to produce the same displacement ($p<0.001$). Further, the hysteresis of the average loading cycle in the children with CP was over three times that of the typically developing children ($p<0.001$). **Interpretation:** We believe that the plantarflexor muscles of children with CP are stiffer and intrinsically more resistant to stretch, even though they retain near normal excursion. This increased stiffness is a non-neurally-mediated feature demonstrated by these children. The extent to which it influences function and predisposes the children to development of soft tissue contracture is unknown.

PMID: 20132139 [PubMed - as supplied by publisher]

9. Dev Med Child Neurol. 2010 Jan 28. [Epub ahead of print]

An internet-based physical activity intervention for adolescents with cerebral palsy: a randomized controlled trial.

Maher CA, Williams MT, Olds T, Lane AE.

School of Health Sciences, University of South Australia, Adelaide, Australia.

Aim: To determine the effectiveness of an 8-week internet-based, lifestyle physical-activity intervention for adolescents with cerebral palsy (CP). **Method:** A randomized controlled trial using concealed allocation with blinded assessments at baseline, 10, and 20 weeks. Forty-one adolescents with CP participated (26 males, 15 females; mean age 13y 7mo, SD 1y 8mo, range 11-17y; Gross Motor Function Classification System levels: I, n=21; II, n=17; III, n=3; unilateral distribution n=16, bilateral n=25). Primary outcome was physical activity (NL-1000 accelerometers and self-report [Multimedia Activity Recall for Children and Adolescents: MARCA]). Secondary outcomes were exercise knowledge (a purpose-designed scale), attitudes, intention and self-efficacy (Lifestyle Education for Activity Program II scales), self-reported sedentary behaviour (MARCA), and functional capacity (6-min walk test). **Results:** At 10 weeks the intervention group showed no increased physical activity compared with the comparison group (weekly steps: change of +2420 vs -12189 steps p=0.06; weekly moderate-to-vigorous physical activity: change of +70 vs +8min, p=0.06; weekly distance walked: change of +3 vs -9.1km, p=0.05) and exercise knowledge (12% vs 1% improvement, p=0.08). There were no statistically significant differences for these outcomes at 20 weeks, or in self-reported physical activity at 10 or 20 weeks. **Interpretation:** There was a positive short-term pattern for improvement in physical activity and knowledge. Internet-based programs may offer an alternative for participants unable to attend regular face-to-face physical activity programs.

PMID: 20132138 [PubMed - as supplied by publisher]

10. Dev Med Child Neurol. 2010 Jan 28. [Epub ahead of print]

Characterization of spasticity in cerebral palsy: dependence of catch angle on velocity.

Wu YN, Ren Y, Goldsmith A, Gaebler D, Liu SQ, Zhang LQ.

Rehabilitation Institute of Chicago, IL, USA.

Aim: To evaluate spasticity under controlled velocities and torques in children with cerebral palsy (CP) using a manual spasticity evaluator. **Method:** The study involved 10 children with spastic CP (six males, four females; mean age 10y 1mo, SD 2y 9mo, range 7-16y; one with quadriplegia, six with right hemiplegia, three with left hemiplegia; Gross Motor Function Classification System levels I [n=2], II [n=3], III [n=2], IV [n=2], and V [n=1]; Manual Ability Classification System levels II [n=5], III [n=4], and V [n=1]) and 10 typically developing participants (four males, six females; mean age 10y 3mo, SD 2y 7mo, range 7-15y). Spasticity and catch angle were evaluated using joint position, resistance torque, and torque rate at velocities of 90 degrees, 180 degrees, and 270 degrees per second, controlled using real-time audio-visual feedback. Biomechanically, elbow range of motion (ROM), stiffness, and energy loss were determined during slow movement (30 degrees/s) and under controlled terminal torque. **Results:** Compared with typically developing children, children with CP showed higher reflex-mediated torque (p<0.001) and the torque increased more rapidly with increasing velocity (p<0.001). Catch angle was dependent on velocity and occurred later with increasing velocity (p=0.005). Children with CP showed smaller ROM (p<0.05), greater stiffness (p<0.001), and more energy loss (p=0.003). **Interpretation:** Spasticity with velocity dependence may also be position-dependent. The delayed catch angle at higher velocities indicates that the greater resistance felt by the examiner at higher velocities was also due to position change, because the joint was moved further to a stiffer position at higher velocities.

PMID: 20132137 [PubMed - as supplied by publisher]

11. Dev Med Child Neurol. 2010 Jan 28. [Epub ahead of print]**Effectiveness of functional progressive resistance exercise strength training on muscle strength and mobility in children with cerebral palsy: a randomized controlled trial.**

Scholtes VA, Becher JG, Comuth A, Dekkers H, VAN Dijk L, Dallmeijer AJ.

Department of Rehabilitation Medicine, EMGO Institute for Health and Care Research, VU University Medical Center, Amsterdam, the Netherlands.

Aim: To evaluate the effectiveness of functional progressive resistance exercise (PRE) strength training on muscle strength and mobility in children with cerebral palsy (CP). **Method:** Fifty-one children with spastic uni- and bilateral CP; (29 males, 22 females; mean age 10y 5mo, SD 1y 10mo, range 6y 0mo-13y 10mo; Gross Motor Function Classification System levels I-III) were randomized to the intervention group (n=26) or the control group (n=25, receiving usual care). The intervention group trained for 12 weeks, three times a week, on a five-exercise circuit, which included a leg-press and functional exercises. The training load progressively increased based on the child's maximum level of strength, determined by the eight-repetition maximum. Muscle strength (measured with hand-held dynamometry and a six-repetition maximum leg-press test), mobility (measured with the Gross Motor Function Measure, two functional tests, and a mobility questionnaire), and spasticity (measured by the appearance of a catch) were evaluated before, during, directly after, and 6 weeks after the end of training by two blinded research assistants. **Results:** Directly after training, there was a statistically significant effect ($p < 0.05$) on muscle strength (knee extensors +12% [0.56N/kg; 95% confidence interval {CI} 0.13-0.99]; hip abductors +11% [0.27N/kg; 95% CI 0.00-0.54]; total +8% [1.30N/kg; 95% CI 0.56-2.54]; six-repetition maximum +14% [14%; 95% CI 1.99-26.35]), but not on mobility or spasticity. A detraining effect was seen after 6 weeks. **Interpretation:** Twelve weeks of functional PRE strength training increases muscle strength up to 14%. This strength gain did not lead to improved mobility.

PMID: 20132136 [PubMed - as supplied by publisher]

12. J Vasc Access. 2010 Jan 28. [Epub ahead of print]**Vascular access challenge on a patient with cerebral palsy and severe kyphoscoliosis.**

Leung S, Malhotra AD, Eisen LA.

Division of Critical Care Medicine, Department of Medicine, Montefiore Medical Center, Albert Einstein College of Medicine, New York - USA.

We report a case of vascular access challenge on a patient with severe kyphoscoliosis and joint contractures. Multiple internal jugular (IJ) central venous catheters (CVC) and a peripherally inserted central catheter (PICC) catheterization were attempted via ultrasound guidance and all resulted in malposition. The PICC attempt fortuitously pushed a malpositioned IJ into the correct position. Computed tomography (CT) demonstrated a narrow thoracic inlet with no definite venous stenoses. Therefore, severe chest wall deformity, a narrow thoracic inlet and inadequate positioning of the patient secondary to his contractures all contributed to the malposition of the PICC and CVCs.

PMID: 20119920 [PubMed - as supplied by publisher]

13. N Engl J Med. 2010 Jan 28;362(4):346-56.**Case records of the Massachusetts General Hospital. Case 3-2010. A 5-month-old boy with developmental delay and irritability.**

Krishnamoorthy KS, Eichler FS, Goyal NA, Small JE, Snuderl M.

Division of Pediatric Neurology, Massachusetts General Hospital, USA.

PMID: 20107221 [PubMed - indexed for MEDLINE]

14. Res Dev Disabil. 2010 Jan 28. [Epub ahead of print]**Theory of mind in children with severe speech and physical impairments.**

Dahlgren S, Dahlgren Sandberg A, Larsson M.

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The development of a person's ability to understand other's thoughts and feelings, so-called "theory of mind" (ToM), is subject to study. Children with communicative disabilities have exhibited problems in this respect, highlighting the role of language in the development of ToM. In this study, ToM was studied in children with cerebral palsy and severe speech impairments. Two tasks, differently dependent on verbal abilities, were used. The results were compared to those of a mental age matched group. The groups differed significantly on the verbally dependent task while difference in performance did not reach significance on the less verbally dependent one. The results are discussed in terms of a delayed development of ToM in children with severe speech and physical impairments, dependent on verbal abilities. Copyright © 2009 Elsevier Ltd. All rights reserved.

PMID: 20116972 [PubMed - as supplied by publisher]

15. Rev Neurol (Paris). 2010 Jan 28. [Epub ahead of print]**New developments in spastic unilateral cerebral palsy. [Article in French]**

Chabrier S, Roubertie A, Allard D, Bonhomme C, Gautheron V.

Service de médecine physique et de réadaptation pédiatrique, hôpital Bellevue, centre hospitalier universitaire de Saint-Etienne, 21, boulevard Pasteur, 42055 Saint-Etienne cedex 2, France.

INTRODUCTION: Hemiplegic (or spastic unilateral) cerebral palsy accounts for about 30% of all cases of cerebral palsy. With a population prevalence of 0.6 per 1000 live births, it is the most common type of cerebral palsy among term-born children and the second most common type after diplegia among preterm infants. **STATE OF THE ART:** Many types of prenatal and perinatal brain injury can lead to congenital hemiplegia and brain MRI is the most useful tool to classify them with accuracy and to provide early prognostic information. Perinatal arterial ischemic stroke thus appears as the leading cause in term infants, whereas encephalopathy of prematurity is the most common cause in premature babies. Other causes include brain malformations, neonatal sinovenous thrombosis, parenchymal hemorrhage (for example due to coagulopathy or alloimmune thrombocytopenia) and the more recently described familial forms of porencephaly associated with mutations in the COL4A1 gene. **PERSPECTIVES:** In conjunction with pharmacologic treatment (botulinium neurotoxin injection), new evidence-based rehabilitational interventions, such as constraint-induced movement therapy and mirror therapy, are increasingly being used. Copyright © 2009 Elsevier Masson SAS. All rights reserved.

PMID: 20116812 [PubMed - as supplied by publisher]

16. Gait Posture. 2010 Jan 27. [Epub ahead of print]**Natural history of flexed knee gait in diplegic cerebral palsy evaluated by gait analysis in children who have not had surgery.**

Rose GE, Lightbody KA, Ferguson RG, Walsh JC, Robb JE.

Anderson Gait Analysis Laboratory, Edinburgh, United Kingdom.

Eighteen children with diplegic cerebral palsy and no history of orthopaedic surgery had two gait analyses a mean of 6.3 years apart to analyse the effects of time on their gait. The mean age of the children at first analysis was 7.7 years (range 4.4-13.3 years). The data was analysed as a whole group (18 children) and as two sub-groups of nine children: those with a shorter follow-up (mean 5.0 years) and those with a longer follow-up (mean 7.5 years) between analyses. The following significant bilateral changes were seen in the whole group and longer follow-up sub-group: deterioration in the range of knee flexion, mid-stance knee flexion, peak knee extension in stance and ham-

string length and an improvement in mean and maximum hip rotation. Temporal data showed no significant changes once normalised. There were no bilateral significant changes in data from children evaluated at a mean of 5 years follow-up. GMFCS scores generally improved over time despite the significant increase in flexed knee gait. There was no significant change in gait deviation index in any group over time. There was an increase in body mass index in 16 children but there was no correlation between this and the degree of mid-stance knee flexion. These findings may have implications for longer term follow-up of children with cerebral palsy into adulthood. Copyright © 2009 Elsevier B.V. All rights reserved.

PMID: 20116253 [PubMed - as supplied by publisher]

17. *J Tradit Chin Med.* 2009 Dec;29(4):243-8.

Acupuncture combined with music therapy for treatment of 30 cases of cerebral palsy.

Yu HB, Liu YF, Wu LX.

Department of Acupuncture, Shenzhen TCM Hospital of Guangdong Province, Shenzhen 518000, China.

OBJECTIVE: To observe clinical therapeutic effects of acupuncture combined with music therapy for treatment of cerebral palsy. **METHODS:** Sixty children with cerebral palsy were randomly divided into an acupuncture group (Group Acup.) and an acupuncture plus music group (Group Acup.+ M). Simple acupuncture was applied in Group Acup., and acupuncture at 5 groups of points plus music were applied in Group Acup. +M. The treatment was given once every two days with 3 treatments weekly, and 36 treatments constituted a therapeutic course. Therapeutic effects including movement improvement were observed for comparison after 3 courses of treatments. **RESULTS:** The comprehensive functions were elevated in both groups, and the total effective rate in Group Acup. + M was obviously better than that in Group Acup. ($P < 0.05$). Movement functions were also improved in both groups, but the differences in improvement of creeping and kneeling, standing, and walking were significant between the two groups ($P < 0.01$), showing the effect in Group Acup. + M was better than that in Group Acup.. **CONCLUSION:** The therapy of acupuncture plus music gained better therapeutic effect on cerebral palsy than simple acupuncture, which provided new thoughts for treating the disease by comprehensive therapies.

PMID: 20112480 [PubMed - in process]

18. *Pediatr Surg Int.* 2009 Nov;25(11):987-90.

Impact of rikkunshito, an herbal medicine, on delayed gastric emptying in profoundly handicapped patients.

Kawahara H, Mitani Y, Nomura M, Nose K, Yoneda A, Hasegawa T, Kubota A, Fukuzawa M.

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PURPOSE: Rikkunshito is used to treat functional dyspepsia in adults. This study investigated the effects of rikkunshito on delayed gastric emptying in handicapped patients. **METHODS:** A retrospective review was performed in nine profoundly handicapped patients (aged 1-19 years). All were diagnosed with delayed gastric emptying based on their half gastric emptying time ($T(1/2)$) over 90 min. Gastric emptying was evaluated after the ingestion of liquid meals using the (^{13}C) -acetate breath test and the BreathID system. Participants were given rikkunshito [0.3 g/(kg day)] with the aim of accelerating gastric emptying. Parameters related to gastric emptying before and during rikkunshito administration were compared using the Wilcoxon signed-rank test. Data were expressed as the median (range). **RESULTS:** Emesis and hematemesis were relieved with rikkunshito administration in four symptomatic patients. The $T(1/2)$ and $T(\text{lag})$ decreased significantly during rikkunshito administration from 115 min (94-167 min) to 107 min (64-66 min; $p = 0.02$), and from 60 min (42-90 min) to 47 min (29-59 min; $p = 0.03$), respectively. The gastric emptying coefficient did not show a significant change [3.1 (2.8-3.8) vs. 3.2 (2.6-4.0), $p = 0.15$] with rikkunshito treatment. **CONCLUSION:** The administration of rikkunshito resulted in symptomatic relief and improved gastric emptying in profoundly handicapped patients with delayed gastric emptying.

PMID: 19697049 [PubMed - indexed for MEDLINE]

19. Phys Occup Ther Pediatr. 2009;29(4):362-6.**Transition to adult-oriented health care: perspectives of youth and adults with complex physical disabilities.**

Gorter JW.

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Comment on:

Phys Occup Ther Pediatr. 2009;29(4):345-61.

PMID: 19916822 [PubMed - indexed for MEDLINE]

Epidemiology / Aetiology / Diagnosis & Early Treatment**20. J Trop Pediatr. 2010 Feb 1. [Epub ahead of print]****Neurodevelopmental Outcome of Acute Bilirubin Encephalopathy.**

Mukhopadhyay K, Chowdhary G, Singh P, Kumar P, Narang A.

Neonatal Unit, Department of Pediatrics, PGIMER, Chandigarh, India.

The aim of the study was to determine the neurodevelopmental outcome of acute bilirubin encephalopathy (ABE) in children who underwent double volume exchange transfusion (DVET). The 25 referred newborns of ≥ 35 weeks gestation with total serum bilirubin >20 mg dl⁻¹ and signs of ABE were enrolled and followed up at 3, 6, 9 and 12 months. Denver Development Screening Test (DDST), Neurological examination along with MRI at discharge and brain stem evoked response audiometry (BERA) at 3 months were done. Abnormal neurodevelopment was defined as either (i) cerebral palsy or (ii) abnormal DDST or (iii) abnormal BERA. The mean bilirubin at admission was 37 mg dl⁻¹. MRI and BERA were abnormal in 61% and 76%. At 1 year, DDST and neurological abnormality were seen in 60% and 27% and 80% had combined abnormal neurodevelopment. MRI had no relation ($P = 0.183$) but abnormal BERA had a significant association ($P = 0.004$) with abnormal outcome. Intermediate and advanced stages of ABE associated with significant adverse outcome in spite of DVET.

PMID: 20123952 [PubMed - as supplied by publisher]

21. J Neurosci Res. 2010 Feb 1. [Epub ahead of print]**Functional central nervous system myelin repair in an adult mouse model of demyelination caused by proteolipid protein overexpression.**

Espinosa-Jeffrey A, Hitoshi S, Zhao P, Awosika O, Agbo C, Olaniyan E, Garcia J, Valera R, Thomassian A, Chang-Wei R, Yamaguchi M, de Vellis J, Ikenaka K.

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Two types of interventions to remyelinate the adult demyelinated central nervous system were investigated in heterozygous transgenic mice overexpressing the proteolipid protein gene. 1) A cocktail of trophic factors, "TS1," was directed toward the activation of the endogenous pool of neural progenitors to increase the number of myelinating oligodendrocytes (OL) in the brain. 2) A combinatorial approach in which OL progenitors were coinjected with TS1 into the corpus callosum of wild-type and He4e transgenic mice that displayed hindlimb paralysis. The levels of locomotor ability in these mice were evaluated after a single treatment. The data showed that a single administration of either one of the interventions had similar therapeutic effects, alleviating the symptoms of demyelination and leading to the recovery of hindlimb function. Histological and immunofluorescent examination of brain sections showed extensive remyelination that was sufficient to reverse hindlimb paralysis in transgenic mice. When the inter-

ventions were administered prior to hindlimb paralysis, He4e mice were able to walk up to 1 year of age without paralysis. (c) 2010 Wiley-Liss, Inc.

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22. Proc Natl Acad Sci U S A. 2010 Feb 1. [Epub ahead of print]

Inhibitory role for GABA in autoimmune inflammation.

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GABA, the principal inhibitory neurotransmitter in the adult brain, has a parallel inhibitory role in the immune system. We demonstrate that immune cells synthesize GABA and have the machinery for GABA catabolism. Antigen-presenting cells (APCs) express functional GABA receptors and respond electrophysiologically to GABA. Thus, the immune system harbors all of the necessary constituents for GABA signaling, and GABA itself may function as a paracrine or autocrine factor. These observations led us to ask further whether manipulation of the GABA pathway influences an animal model of multiple sclerosis, experimental autoimmune encephalomyelitis (EAE). Increasing GABAergic activity ameliorates ongoing paralysis in EAE via inhibition of inflammation. GABAergic agents act directly on APCs, decreasing MAPK signals and diminishing subsequent adaptive inflammatory responses to myelin proteins.

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23. Acta Paediatr. 2010 Jan 28. [Epub ahead of print]

Neurodevelopment of children born very preterm and free of severe disabilities: the Nord-Pas de Calais Epipage cohort study.

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Aim: To describe the development of very preterm children free of cerebral palsy or severe sensory impairment in the domains of gross and fine motor functions, language and sociability at a corrected age of 2 years; to identify factors associated with performances in each domain. **Methods:** A total of 347 children born in 1997 before 33 weeks of gestation, part of the EPIPAGE population-based cohort study, had their psychomotor development assessed with the Brunet-Lezine scale. **Results:** The study population had a mean gestational age of 30.1 +/- 2.0 weeks. Lower developmental quotients (DQ) were observed in the study group compared to the reference sample (96 +/- 13 vs 104 +/- 8, $p < 0.01$). Fine motor function, language and sociability were all affected with a p value < 0.01 . Multivariate analysis showed that duration of intubation and parents' educational and occupational levels were the only variables significantly related to each developmental domain ($p < 0.01$). **Conclusions:** Children very preterm and free of severe disabilities had mild delays in multiple areas of development. The mechanisms by which neonatal factors played a role need further investigation. However socioeconomic status had a great impact on development and our results underline the need for improved support of socioeconomically disadvantaged parents after a preterm birth.

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