

Monday 30 August 2010

This free weekly bulletin lists the latest research on cerebral palsy (CP), as indexed in the NCBI, PubMed (Medline) and Entrez (GenBank) databases. These articles were identified by a search using the key term "cerebral palsy".

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Interventions

1. *Phys Occup Ther Pediatr*. 2010 Aug 24. [Epub ahead of print]

A Systematic Review of Common Physiotherapy Interventions in School-Aged Children with Cerebral Palsy.

Martin L, Baker R, Harvey A.

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This systematic review focused on the common conventional physiotherapy interventions used with children with cerebral palsy (CP), aged 4 to 18 years, and critically appraised the recent evidence of each of these interventions using the Oxford Centre for Evidence-Based Medicine Levels of Evidence. The search strategy yielded 34 articles after inclusion and exclusion criteria were applied. The investigated physiotherapy interventions included strength and functional training, weight-supported treadmill training (WBSTT), and neurodevelopmental treatment (NDT). A category of treatment dosage was also included. Strength training was the most studied intervention with significant improvements found in the strength of selected muscle groups using dynamometry, with fewer studies showing significant improvement in function. Functional training showed improvements in gross motor function, endurance, and temperospatial measures, such as gait speed and stride length. Nonsignificant trends of improvement on the Gross Motor Function Measure (GMFM) and gait velocity were found for WBSTT by a few studies with low levels of evidence (case series). Of three studies that evaluated NDT, one high-level evidence study, i.e., randomized controlled trial (RCT) found significant improvements on the GMFM. All studies reviewing treatment dosage had high levels of evidence (RCTs), yet found no significant differences for different intensities of treatment. These results indicate that the levels of evidence for physiotherapy interventions, particularly strengthening and to a lesser extent functional training, in school-aged children with CP has improved; however, further high-level evidence is needed for other interventions.

PMID: 20735200 [PubMed - as supplied by publisher]

2. *J Paediatr Child Health*. 2010 Aug 25. [Epub ahead of print]

Parent-perceived barriers to participation in children and adolescents with cerebral palsy.

Vogts N, Mackey AH, Ameratunga S, Stott NS.

School of Medicine and Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand.

Aim: To pilot the use of the Craig Hospital Inventory of Environmental Factors (CHIEF) questionnaire to ascertain information regarding barriers to participation experienced by a sample of New Zealand children with cerebral palsy. **Methods:** The CHIEF questionnaire was administered to parents/caregivers of a consecutive sample of 32 children with cerebral palsy attending a paediatric tertiary clinic in Auckland. Twenty-three children walked inde-

pendently, 5 used walking aides and four used a wheelchair. Twenty-four of the 32 parent-respondents provided contextual feedback for their responses and wider issues relating to the topic. Results: The barriers to participation most commonly reported by parents were attitudes at school (72%) and in the community (56%), difficulties accessing personal equipment (59%), and the natural environment and built surroundings (56%). Contextual information from families generally supported their answers to the questionnaire but highlighted that some parents had confused the 'not applicable' and 'never' options. Discrepancy between scores on the policy-related questions and later contextual feedback suggested that the policy subscale did not fully capture family concerns about limited availability of public funding for equipment, therapy, and educational support. Conclusions: The CHIEF instrument proved easy to use in a clinic setting. However, parent-respondent feedback highlighted the difficulties in interpreting responses to some items when the instrument is used in isolation to quantify environmental barriers to participation. The results highlight the need to develop research approaches and tools that can explore barriers to participation by children with cerebral palsy taking account of socio-economic and other relevant contextual information.

PMID: 20796184 [PubMed - as supplied by publisher]

3. *Dev Med Child Neurol.* 2010 Sep;52(9):787.

In the shadows of life.

Hoffinger S.

Second Vice President of the American Academy for Cerebral Palsy and Developmental Medicine.

PMID: 20731696 [PubMed - in process]

4. *J Pediatr Orthop.* 2010 Sep;30(6):582-7.

Forced-use, Without Therapy, in Children With Hemiplegia: Preliminary Study of a New Approach for the Upper Limb.

Motta F, Antonello CE, Stignani C.

Department of Paediatric Orthopaedics, "V. Buzzi" Children's Hospital, Milan, Italy.

BACKGROUND: Forced use (FU) is an emerging treatment for children with hemiplegic cerebral palsy (CP). It involves constraining the unaffected arm and no additional treatment of the affected arm. Our study examined a new approach to FU in children with hemiplegic CP: that is, restraint of the unaffected limb and no rehabilitation. **METHODS:** Ten children with hemiplegic CP aged between 5 and 9 years were compared with 10 control children (aged between 5 and 8 y). All participants were classified as MACS level II. The FU group wore a fixed cast, on the unaffected arm for 21 consecutive days, and, such as the control group, did not receive any physical therapy. All participants were assessed by the Melbourne Assessment of Unilateral Upper Limb Function and the Shriners Hospital Upper Extremity Evaluation. **RESULTS:** A statistically significant increase in both the functional scales was already apparent after cast removal and was maintained during follow-ups. The total Melbourne Assessment of Unilateral Upper Limb Function percentage score increased significantly to 9.5% and 12.3% on 3-week and 3-month follow-up examinations, respectively ($P < 0.05$). A statistically significant increase was observed in 2 of the 3 parts of the Shriners Hospital Upper Extremity Evaluation: spontaneous use ($P < 0.05$) and the ability of the involved limb to grasp and release (G/R) ($P < 0.05$). **CONCLUSIONS:** These preliminary results suggest that FU without rehabilitation improves the spontaneous use and function of the affected upper limb. In children with hemiplegia, this approach may be an economically viable means of upper limb treatment that has no side effects.

LEVEL OF EVIDENCE: Therapeutic Level III. See Instructions to Authors for complete description of level of evidence.

PMID: 20733424 [PubMed - in process]

5. Disabil Rehabil. 2010 Aug 25. [Epub ahead of print]

Self-concept in children with cerebral palsy: is there something in the wind?

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Purpose. The aim of this study was to compare self-concept in four groups of children distinguished by the presence/absence of either a motor impairment (with and without cerebral palsy, CP) or social adjustment problems (victimisation). **Method.** Four groups were formed: a victimised CP group (n = 17), a non-victimised CP group (n = 41), a victimised comparison group (n = 10) and a non-victimised comparison group (n = 46). Self-concept was measured using the Self-Perception Profile for Children (SPPC, Harter The Self-Perception Profile for Children. Unpublished manual. Denver, CO: University of Denver; 1985) during the school visit. Victimisation was obtained by conducting a classwide sociometric interview in the class of the target child. **Results.** The results indicate that the groups differ depending on the domain measured. **Conclusions:** By identifying factors that may influence self-concept in children with CP, this study contributes new information to this subject.

PMID: 20738209 [PubMed - as supplied by publisher]

6. J Pediatr Orthop. 2010 Sep;30(6):568-74.

Morphometric Analysis of the Femur in Cerebral Palsy: 3-dimensional CT Study.

Gose S, Sakai T, Shibata T, Murase T, Yoshikawa H, Sugamoto K.

*Department of Orthopaedic Surgery, Morinomiya Hospital, Osaka daggerDepartment of Orthopaedic Surgery double daggerOrthopaedic Biomaterial Science, Osaka University Graduate School of Medicine, Suita, Japan.

BACKGROUND: The cause of hip disorder in cerebral palsy (CP) has been thought to involve muscle imbalance, flexion, and adduction contracture of the hip joint, acetabular dysplasia, and femoral growth abnormalities. The aim of this study was to quantitatively evaluate the 3-dimensional femoral geometry and subluxation/dislocation of the hip in spastic CP using 3D-CT reconstructed images of the pelvis and the femur, focusing on the femoral growth abnormalities in CP. **METHODS:** Between June 2006 and September 2009, 186 hips in 93 bilateral spastic CP patients, including spastic diplegia (SD) in 73 patients and spastic quadriplegia (SQ) in 20 patients, who had not received any surgical treatment, were investigated using 3D-CT at our hospital. There were 59 boys and 34 girls with an average age of 5.3 years (range: 2.6 to 6.8 y). As an index for the femoral geometry, the neck-shaft angle, the femoral anteversion, and the femoral offset were 3-dimensionally measured. The center of the acetabulum and the femoral head were determined to calculate the CT migration percentage as the distance between these centers divided by the femoral head diameter. To elucidate the factors related to hip subluxation/dislocation, the relationships between the neck-shaft angle, the femoral anteversion, the femoral offset, and the CT migration percentage were investigated. **RESULTS:** The mean neck-shaft angle was 150.4+/-9.4 degrees (range: 129.4 to 173.2 degrees). The mean femoral anteversion was 44.4+/-13.6 degrees (range: 5.8 to 84.0 degrees). The mean CT migration percentage was 22.4+/-22.7% (range: 3 to 129%). There was positive correlation between the CT migration percentage and the neck-shaft angle (r=0.49). Hips with large CT migration percentage tended to show coxa valga. There was an inverse correlation between the neck-shaft angle and the femoral offset (r=-0.90), but no correlation between the CT migration percentage and the femoral anteversion (r=0.26), between the femoral offset and the femoral anteversion (r=-0.25), or between the neck-shaft angle and the femoral anteversion (r=0.23). The neck-shaft angle, the femoral anteversion, and the CT migration percentage were significantly larger, and the femoral offset was significantly smaller, in patients with the Gross Motor Functional Classification System (GMFCS) level IV/V (nonwalking children) and SQ type, than in patients with GMFCS level II/III (mostly walking children) and SD type. **CONCLUSIONS:** The 3-dimensional femoral geometry in CP patients can be analyzed quantitatively using 3D-CT regardless of the abnormal spastic posture. Our data indicate that 3-dimensional evaluation is accurate and useful for analysis of the femur and acetabulum in CP, and that the extent of coxa valga and femoral anteversion is more severe in the patients with GMFCS level IV/V and SQ type.

LEVEL OF EVIDENCE: Level IV.

PMID: 20733422 [PubMed - in process]

7. J Pediatr Orthop. 2010 Sep;30(6):562-7.

Excessive hip flexion during gait in patients with static encephalopathy: an examination of contributing factors.

Rethlefsen SA, Lening C, Wren TA, Kay RM.

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BACKGROUND: Excessive hip flexion in gait is thought to be associated with hip flexion contracture, but has also been associated with excessive anterior pelvic tilt, knee flexion, internal hip rotation, and muscular factors. The purpose of this study was to examine the contributors to excessive hip flexion during gait in children with cerebral palsy, with and without hip flexion contractures. **METHODS:** A retrospective chart review was conducted of 155 children with cerebral palsy. Potential contributors to excessive hip flexion in stance were evaluated, including static and dynamic range of motion, strength measurements, and patient factors including age, previous surgery, distribution of involvement (hemiplegia, diplegia, and quadriplegia), and Gross Motor Function Classification System level. Univariate analysis was performed using simple linear regression and analysis of variance, with appropriate post-hoc tests. All variables were then included in a stepwise linear regression using forward selection. **RESULTS:** Univariate analysis demonstrated a significant relationship ($P < 0.05$) between excessive hip flexion in stance and all predictive variables except static dorsiflexion range of motion with the knee flexed and maximum dorsiflexion in stance. Results of stepwise regression revealed that 3 variables accounted for 65% of the variance: passive hip extension range of motion, average pelvic tilt during the gait cycle, and knee extension achieved in the stance phase of gait. Twenty-two of 45 (49%) exhibiting hip flexion contractures of greater than 10 degrees did not exhibit excessive hip flexion in stance phase. **CONCLUSIONS:** Hip extension in stance in children with static encephalopathy depends primarily on hip extension passive range of motion, the amount of pelvic tilt, and knee extension in stance phase. These 3 variables account for 65% of variance in these 155 patients, whereas other factors (age, dorsiflexion in stance, and hamstring range) each account for only 2% to 3% of the variance. Careful clinical examination, including computerized gait analysis when available, is recommended before surgical intervention to determine whether excessive hip flexion is a primary or compensatory deviation. **LEVEL OF EVIDENCE:** Level IV, case series.

PMID: 20733421 [PubMed - in process]

8. J Child Psychol Psychiatry. 2010 Aug 25. [Epub ahead of print]

Sensory processing in internationally adopted, post-institutionalized children.

Wilbarger J, Gunnar M, Schneider M, Pollak S.

Department of Kinesiology, University of Wisconsin-Madison; USA.

Background/Methods: Sensory processing capacities of 8-12-year-old internationally adopted (IA) children who experienced prolonged institutional care (> 12 months with 75% of pre-adoption lives in institutional care) prior to adoption into family environments (PI) were compared to a group of IA children who were adopted early (< 8 months) predominantly from foster care with little or no institutional experience (EA/FC) and another group of non-adopted (NA) children raised by their birth parents in the United States. All children had estimated IQs within the normal range and did not evidence major neurodevelopmental disorders (e.g., cerebral palsy, fetal alcohol syndrome, Down's syndrome). Sensory processing was evaluated with a commonly used parent-report measure and a laboratory assessment. **Results:** Children who had experienced prolonged institutionalization showed higher levels of reactivity to sensation and displayed both more aversion and approach to sensory stimuli than the other groups. The comparison groups (EA/FC & NA) did not differ on any of the sensory processing measures. **Conclusions:** These results suggest that early institutional rearing which typically involves both sensory and social deprivation is associated with problems in sensory modulation capacities.

PMID: 20738449 [PubMed - as supplied by publisher]

9. Am J Phys Med Rehabil. 2010 Aug 24. [Epub ahead of print]

Botulinum Toxin Type A Injections for Treatment of Spastic Equinus in Cerebral Palsy: A Secondary Analysis of Factors Predictive of Favorable Response.

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OBJECTIVE: To investigate markers predicting favorable botulinum toxin injection outcomes in treating spastic equinus gait in children with cerebral palsy. **DESIGN:** Thirty-six children (21 boys and 15 girls, aged 1.5-9.6 yrs; 20 with unilateral and 16 with bilateral cerebral palsy levels I to IV with the Gross Motor Function Classification System) with 49 treated lower limbs were included. Passive range of movement, selective dorsiflexion, dynamic muscle length (modified Tardieu Scale), calf tone (modified Ashworth Scale), attainment of anticipated gait pattern (Goal Attainment Scale), and video gait analysis (Observational Gait Scale) were assessed before and 1, 2, and 4 mos after intervention. Participants were classified as poor or good responders, according to the Goal Attainment Scale response at 2 mos. **RESULTS:** Good response was noted in 23 (64%) children and 29 (59%) legs, whereas 13 (36%) children and 20 (41%) legs were defined as poor responders. In a multivariate regression analysis, the best predictors of good response per child were higher initial Observational Gait Scale total scores, one-level treatment, and normal cognition; and the best predictors per leg were good initial selective motor control in the ankle and capability of occasional flatfoot contact at pretreatment. **CONCLUSIONS:** These results suggest that children with less severe functional deficit, fair to good selective motor control in the ankle, and mild equinus gait respond best to focal botulinum toxin type A treatment, with an eye to flatfoot or heel strike contact. Likewise, children with higher cognitive level seem to derive functional benefit from the treatment.

PMID: 20736816 [PubMed - as supplied by publisher]

10. Arch Dis Child Fetal Neonatal Ed. 2010 Aug 24. [Epub ahead of print]

Does bronchopulmonary dysplasia contribute to the occurrence of cerebral palsy among infants born before 28 weeks of gestation?

Van Marter LJ, Kuban KC, Allred E, Bose C, Dammann O, O'Shea M, Laughon M, Ehrenkranz RA, Schreiber MD, Karna P, Leviton A; for the ELGAN Study Investigators.

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Objective: To evaluate the relationships among cerebral palsy (CP) phenotypes and bronchopulmonary dysplasia (BPD) severity and, in the process, to generate hypotheses regarding causal pathways linking BPD to CP. **Study design** We studied 1047 infants born before the 28th week of gestation. Receipt of supplemental oxygen at 36 weeks postmenstrual age (PMA), with or without the need for mechanical ventilation (MV) at 36 weeks PMA, defined two levels of BPD. At 24 months, the children underwent neurologic examinations and CP diagnoses were made using an algorithm based on topographic localisation. **Results:** The 536 infants with BPD were at increased risk of all three CP phenotypes. In time-oriented multivariable analyses that adjusted for potential confounders, receipt of supplemental oxygen without MV at 36 weeks PMA (BPD) was not associated with increased risk of any CP phenotype. In contrast, BPD accompanied by MV at 36 weeks PMA (BPD/MV) was associated with a nearly sixfold increased risk of quadriplegia and a fourfold increased risk of diplegia. **Conclusions:** Combined treatment with both MV and supplemental oxygen at 36 weeks PMA strongly predicts the more common bilateral CP phenotypes. BPD without MV at 36 weeks PMA was not significantly associated with any form of CP.

PMID: 20736416 [PubMed - as supplied by publisher]

11. J Telemed Telecare. 2010 Aug 24. [Epub ahead of print]**A web-based communication system for integrated care in cerebral palsy: design features, technical feasibility and usability.**

Gulmans J, Vollenbroek-Hutten MM, Visser JJ, Nijeweme-d'Hollosy WO, van Gemert-Pijnen JL, van Harten WH.

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We developed a secure, web-based system for parent-professional and inter-professional communication. The aim was to improve communication in the care of children with cerebral palsy. We conducted a six-month trial of the system in three Dutch health-care regions. The participants were the parents of 30 cerebral palsy patients and 120 professional staff involved in their care. Information about system usage was extracted from the system's database. The experience of the parents and professionals was evaluated by a questionnaire after six months. The system proved to be technically robust and reliable. A total of 21 parents (70%) and 66 professionals (55%) used the system. The parents submitted 111 questions and 59 responses, with a mean of 5 questions (range 1-17) and 3 responses (range 1-9) per parent. The professionals submitted 79 questions and 237 responses, with a mean of 2 questions (range 1-8) and 4 responses (range 1-23) per professional. Most parents (95%) and some professionals (30%) reported value in using the system, which ranged from efficiency and accessibility to flexibility and transparency. The web-based communication system was technically feasible and produced improved parent-professional and inter-professional communication. It may be especially valuable if frequent interventions or consultations about a child's care are required, involving complex care networks of different professionals and organisations.

PMID: 20736247 [PubMed - as supplied by publisher]

12. Phys Occup Ther Pediatr. 2010 Aug 24. [Epub ahead of print]**Discriminative Validity of the Danish Version of the Pediatric Evaluation of Disability Inventory (PEDI).**

Stahlhut M, Gard G, Aadahl M, Christensen J.

Michelle Stahlhut, BSc, PT, and Gunvor Gard, RPT, PhD, are affiliated with the Lund University, Department of Health Sciences, Division of Physiotherapy, Lund University, Lund, Sweden.

The Pediatric Evaluation of Disability Inventory (PEDI) assesses functional status in children with disabilities aged 0.5-7.5 years. The purpose of this study was to examine if the Danish version of the PEDI was able to discriminate between nondisabled children and children with cerebral palsy (CP) or juvenile idiopathic arthritis (JIA). Convenience sampling was used to select the clinical samples that consisted of 22 children with CP and 14 children with JIA aged 1.5-7.5 years. An additional sample, consisting of 224 nondisabled children aged 1.0-5.9 years, was obtained on the basis of random sampling. The PEDI was administered as a questionnaire completed by the parents. Results from receiver operating characteristics (ROC) analysis showed that in the case of discrimination between children with CP and nondisabled children, the sensitivity and specificity were 77.3 and 97.8%, respectively. In the discrimination between children with JIA and nondisabled children, the sensitivity and specificity were 99.8 and 81.7%, respectively. Study results indicate that the Danish version of the PEDI shows good discriminative validity. Further studies of the discriminative validity are recommended.

PMID: 20735194 [PubMed - as supplied by publisher]

13. BMC Health Serv Res. 2010 Aug 23;10(1):249. [Epub ahead of print]**Clinicians' caseload management behaviours as explanatory factors in patients' length of time on caseloads: a predictive multilevel study in paediatric community occupational therapy.**

Kolehmainen N, Maclennan G, Francis JJ, Duncan EA.

BACKGROUND: Long waiting times and large caseloads are a challenge to children's therapy services internationally. Research in hospital-based healthcare indicates that waiting times are a function of throughput, and that length

of care episode is related to clinicians' caseload management behaviour (i.e. actions at assessment, treatment, post-treatment, and discharge). There have been few attempts to study this in community health services. The present study investigated whether community occupational therapists' behaviour predicts children's length of time (LoT) on caseloads. **METHODS:** Retrospective survey of case notes of children recently discharged from occupational therapy services. Using cluster random sampling, case notes were drawn from therapy records in six NHSScotland Health Boards. Data about therapists' behaviours of assessing, treating, reviewing and discharging, together with child characteristics, were used to construct regression models of factors related to LoT. **RESULTS:** Twenty-six therapists [median(IQR) time in paediatrics 8(6-13) years] and 154 of their cases [mean(SD) age 7(3) years; median(IQR) LoT 10(3-21)] were included. A multi-level model, adjusting for clustering, for therapists' actions of communicating assessment outcomes to parents, providing treatment, and placing the child on review, and for a diagnosis of cerebral palsy, explained 44% of variation in LoT.

CONCLUSIONS: Occupational therapists' caseload management behaviours are associated with children's LoT on caseloads. Further research is required to investigate the direction of relationships between therapists' behaviours and LoT; and the relationships between contextual factors, therapists' caseload management behaviours and LoT. Further exploration of therapists' beliefs about caseload management could also be useful in identifying possible factors contributing to variation between therapists.

PMID: 20731865 [PubMed - as supplied by publisher]Free Article

14. Arch Oral Biol. 2010 Aug 21. [Epub ahead of print]

Salivary osmolality in individuals with cerebral palsy.

Santos MT, Guaré RO, Leite MF, Ferreira MC, Durão MS, Jardim JR.

Individuals with Special Needs, Universidade Cruzeiro do Sul, Director Dentistry Division Lar Escola São Francisco, São Paulo, Brazil.

OBJECTIVE: To measure the salivary flow rate, osmolality, electrolyte and total protein concentrations in individuals with cerebral palsy (CP). **DESIGN:** Thirty-eight individuals with CP were divided according to the neuromotor abnormality type (total, spastic and dyskinectic) and compared to 22 nondisabled children (control group). Whole saliva was collected under slight suction. The salivary parameters studied were salivary flow rate, osmolality, sodium, potassium, chloride and total protein concentrations. **RESULTS:** CP individuals, with both neuromotor abnormality types (spastic and dyskinectic), presented an increase in salivary osmolality, total protein, potassium and chloride concentrations compared to the control group ($p < 0.05$). Moreover, a reduction in salivary flow rate was verified in spastic individuals ($p < 0.05$). **CONCLUSION:** The reduction in salivary flow rate and increase in osmolality, total protein and electrolyte concentrations of saliva from cerebral palsy individuals could be caused by hydration status.

PMID: 20732673 [PubMed - as supplied by publisher]

15. Hum Mov Sci. 2010 Aug 20. [Epub ahead of print]

Movement Deviation Profile: A measure of distance from normality using a self-organizing neural network.

Barton GJ, Hawken MB, Scott MA, Schwartz MH.

Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, United Kingdom.

We introduce the Movement Deviation Profile (MDP), which is a single curve showing the deviation of an individual's movement from normality. Joint angles, recorded from typically developing children over one gait cycle, were used to train a self-organizing map (SOM) which then generated MDP curves for patients with gait problems. The mean MDP over the gait cycle showed a high correlation ($r(2) = .927$) with the Gait Deviation Index (GDI), a statistically significant difference between groups of patients with a range of functional levels (Gillette Functional Assessment Questionnaire Walking Scale 7-10) and a trend of increasing values for patients with cerebral palsy through hemiplegia I-IV, diplegia, triplegia, and quadriplegia. The small difference between the MDP and GDI can be explained by the SOM's method of operation comparing biomechanical patterns to the nearest reference pattern, and its flexibility to compensate for temporal shifts in movement data. The MDP is an alternative method of processing

complex biomechanical data, potentially supporting clinical interpretation. The electronic addendum accompanying this article is a standalone program, which can be used to calculate the MDP from gait data, and can also be used in other applications where the deviation of multi-channel temporal data from a reference is required.

PMID: 20728953 [PubMed - as supplied by publisher]

16. J Pediatr. 2010 Aug 19. [Epub ahead of print]

Free Sialic Acid Storage Disease Mimicking Cerebral Palsy and Revealed by Blood Smear Examination.

Debray FG, Lefebvre C, Colinet S, Segers K, Stevens R.

Pinocchio Centrum for Inborn Metabolic Diseases, Esperance Hospital, CHC; Department of Medical Genetics, CHU Sart-Tilman, University of Liège.

PMID: 20728092 [PubMed - as supplied by publisher]

17. J Oral Pathol Med. 2010 Aug 3. [Epub ahead of print]

Does the neuromotor abnormality type affect the salivary parameters in individuals with cerebral palsy?

Santos MT, Guaré R, Leite M, Ferreira MC, Nicolau J.

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Background: Previous studies reported alterations in salivary flow rate and biochemical parameters of saliva in cerebral palsy (CP) individuals; however, none of these considered the type of neuromotor abnormality among CP individuals, thus it remains unclear whether the different anatomical and extended regions of the brain lesions responsible for the neurological damage in CP might include disruption of the regulatory mechanism of saliva secretion as part of the encephalopathy. The aim of this study was to evaluate salivary flow rate, pH and buffer capacity in saliva of individuals with CP, aged 3-16 years, with spastic neuromotor abnormality type and clinical patterns of involvement. Methods: Sixty-seven individuals with CP spasticity movement disorder, were divided in two groups according to age (3-8- and 9-16-years-old) and compared with 35 sibling volunteers with no neurological damage, divided in two groups according to age (3-8- and 9-16-years-old). Whole saliva was collected under slight suction and pH and buffer capacity were determined using a digital pHmeter. Buffer capacity was measured by titration using 0.01N HCL, and flow rate was calculated in ml/min. Results: In both age groups studied, whole saliva flow rate, pH and buffer capacity were significantly lower in the spastic CP group ($P < 0.05$). The clinical patterns of involvement did not influence the studied parameters. Conclusion: These findings show that individuals with spastic cerebral palsy present lower salivary flow rate, pH and buffer capacity that can increase the risk of oral disease in this population.

PMID: 20738750 [PubMed - as supplied by publisher]

18. Res Dev Disabil. 2010 Jul-Aug;31(4):936-42. Epub 2010 Apr 9.

Assisting people with multiple disabilities actively correct abnormal standing posture with a Nintendo Wii balance board through controlling environmental stimulation.

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The latest researches adopted software technology turning the Nintendo Wii Balance Board into a high performance change of standing posture (CSP) detector, and assessed whether two persons with multiple disabilities would be able to control environmental stimulation using body swing (changing standing posture). This study extends Wii Balance Board functionality for standing posture correction (i.e., actively adjust abnormal standing posture) to assessed whether two persons with multiple disabilities would be able to actively correct their standing pos-

ture by controlling their favorite stimulation on/off using a Wii Balance Board with a newly developed standing posture correcting program (SPCP). The study was performed according to an ABAB design, in which A represented baseline and B represented intervention phases. Data showed that both participants significantly increased time duration of maintaining correct standing posture (TDMCSP) to activate the control system to produce environmental stimulation during the intervention phases. Practical and developmental implications of the findings were discussed.

PMID: 20381997 [PubMed - indexed for MEDLINE]

19. Child Care Health Dev. 2010 Jun 28. [Epub ahead of print]

Parental attributions of controllability as a moderator of the relationship between developmental disability and behaviour problems.

Woolfson LM, Taylor RJ, Mooney L.

Department of Psychology, University of Strathclyde, Glasgow, UK.

Background: Children with developmental disabilities present behaviour problems to a greater extent than do typically developing children. Psychosocial models of child development suggest that parental attributions of child and adult controllability could moderate this relationship between child disability status and behaviour. **Methods:** The influence of parental attributions of adult and child controllability on the relationship between problem behaviours and disability was explored in mothers of children with developmental disabilities (DD) (N = 20) with a mean age of 9 years 3 months (SD 24.6 months), and in mothers of typically developing (TD) children (N = 26) with a mean age of 9 years 4 months (standard deviation 23.7 months). The DD group comprised 11 children with autistic spectrum disorders or other communication impairments, three children with Down Syndrome, one with cerebral palsy, one with attentional problems, and four with specific or complex developmental problems. Child behaviour was measured by the Child Behaviour Checklist. Parental attributions were measured using a modified version of the Parent Attribution Test and mothers were divided into higher and lower controllability groups on the basis of their responses on this test. **Results:** Multivariate analysis of variance found significant group x adult controllability interaction effects for 'aggressive behaviour', 'rule-breaking behaviour', as well as borderline significant effects for 'social problems' and 'other problems'. Simple effects analysis suggested that when mothers had lower attributions of adult controllability, there were indeed significantly more problem behaviours in the DD group, but when mothers had attributions of higher adult controllability there was no longer any significant difference in problematic behaviour between the two groups. **Conclusions:** Parental attributions of controllability may moderate the well-established effect of disability on problem behaviour. Implications for parent intervention programmes are discussed.

PMID: 20533916 [PubMed - as supplied by publisher]

20. Phys Med Rehabil Clin N Am. 2010 May;21(2):419-27.

Aging and developmental disability.

Strax TE, Luciano L, Dunn AM, Quevedo JP.

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This article addresses the challenges faced by individuals with a developmental disability as they age. As this group ages, many face unpleasant experiences including poverty, isolation, abuse, and at best adequate, but more commonly poor medical care. Due to biomechanical overuse, compounded by an injured nervous system, physiologic aging is accelerated. These patients experience in their 40s and 50s physical changes that able-bodied individuals experience over the age of 70. Often these patients see the least experienced members of the health care team, leading to misdiagnosis and further comorbidity.

PMID: 20494286 [PubMed - indexed for MEDLINE]

21. Augment Altern Commun. 2010 Jun;26(2):97-107.**Assessing comprehension of spoken language in nonspeaking children with cerebral palsy: application of a newly developed computer-based instrument.**

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This paper describes the development of an instrument to assess comprehension of spoken language in children with severe cerebral palsy (CP) who cannot speak, and for whom standard language assessment measures are not appropriate due to severe motor impairment. This instrument, the Computer-Based instrument for Low motor Language Testing (C-BiLLT), was administered to 42 children without disabilities (aged 14 months to 60 months) and to 18 children with severe CP (age 19 months to 71 months). Preliminary data showed that the instrument was acceptable to the children. Convergent validity was investigated by correlating C-BiLLT scores with test results on the well-established Reynell Developmental Language Scales (RDLS). Clinical implications and recommendations for future research are discussed.

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Please note: This is not yet a comprehensive outline of cerebral palsy prevention literature. It is expected that more research will be included when the search terms are expanded to include key terms other than "cerebral palsy". It is a work-in-progress and it will be expanded in coming months.

22. Brain Dev. 2010 Aug 24. [Epub ahead of print]**Epidemiology of cerebral palsy in El-Kharga District-New Valley (Egypt).**

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Cerebral palsy (CP) is the most frequent cause of motor handicap among children. The present door to door (every door) study was conducted in El-Kharga District-New Valley to estimate the epidemiology of CP among children. Each child was subjected to complete medical and neurological examination to detect cases with CP. These diseased children were subjected to meticulous neurological and medical assessment, brain MRI, EEG and Stanford Binet (4th edition). It was found that 52 out of 25,540 children had CP yielding prevalence rate of 2.04/1000 (95% CI: 1.48-2.59) of living births. Mean age of children with CP, was 7.17+/-4.38years. The order of frequency of different subtypes of CP was as follows, 65.4% had spastic type, 26.9% mixed type and 3.8% for each ataxic and dyskinetic types of CP. The frequency of risk factors of CP in our study is prenatal complications (cyanosis, preterm, jaundice, birth weight and obstructed labor of mothers), first baby, similar condition and recurrent abortions.

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