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# CP Research News

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## 1: Int J Rehabil Res. 2008 Dec;31(4):305-13.

### **Nutritional status and obesity in children and young adults with disabilities in Punta Arenas, Patagonia, Chile.**

Vélez JC, Fitzpatrick AL, Barbosa CI, Díaz M, Urzua M, Andrade AH.

aCenter for Rehabilitation, Corporation of Rehabilitation Southern Cross - Lion's Club, Punta Arenas, Chile bDepartment of Epidemiology, University of Washington, Seattle, Washington, USA.

Childhood obesity is reaching epidemic proportions throughout the world; however, little is known on the nutritional status of children with disabilities. To address this issue, medical records of 748 children aged 18 years or younger receiving physical therapy during 2004-2005 at a privately sponsored free rehabilitation clinic in Punta Arenas, Patagonia, Chile were abstracted. Data included demographic, clinical, and anthropometric information recorded at the first visit. As a comparison, height and weight were also collected in 215 children attending local schools. Nutritional status was calculated as body mass index (above 6 years of age) or evaluated by growth curves (6 years of age or below) as undernourished, normal, overweight, obese, or morbidly obese. Logistic regression was used to determine risk factors for obesity in these children. Overall, a significant difference in nutritional status between disabled and non-disabled children was found ( $P < 0.001$ ). Children with disabilities had a higher prevalence of both below and above normal weight than non-disabled children. Risk factors for obesity included increasing age and living with a grandparent independent of other socioeconomic factors. Compared with normal children, risk of obesity was doubled for those with developmental delays [odds ratio (OR): 1.96; 95% confidence interval (CI): 1.16-3.34] and neurological disorders (OR: 2.58, 95% CI: 1.26-5.29), whereas individuals with cerebral palsy were less than half as likely to be obese than non-disabled children (OR: 0.46, 95% CI: 0.20-1.03). We conclude that overnutrition continues to be a problem for both disabled and non-disabled children in Patagonia. Programs to increase physical activity and improve nutrition are needed in this isolated part of the world.

PMID: 19008679 [PubMed - in process]

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**2: Semin Perinatol. 2008 Dec;32(6):438-45.**

**Maternal and infant thyroid disorders and cerebral palsy.**

Hong T, Paneth N.

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Deficiency of thyroid hormone during critical periods of development can severely damage the nervous system, but the specific effects of thyroid hormones on neuromotor development are less certain. Nonetheless, evidence has accumulated to suggest that thyroid hormone deficiency might be one cause of cerebral palsy (CP). The evidence arises from three sets of observations: first, severely premature infants with transient hypothyroxinemia have elevated risks of CP; second, some children born with endemic cretinism in iodine-deficient areas of the world have motor findings compatible with the diagnosis of CP; and third, several studies of the antecedents of CP have encountered a higher than expected prevalence of maternal thyroidal disorders. The evidence thus far is insufficient to conclusively determine what role, if any, thyroid hormone deficiency plays in CP, although it seems clear that neuromotor abnormalities can be the result of insufficient supply of maternal thyroid hormone in utero. A major research priority should be to assess the effects on CP risk of thyroid supplementation in transient hypothyroxinemia of prematurity. Iodine deficiency can be addressed by inexpensive and well-established public health measures, and thyroid hormone deficiency can be addressed by inexpensive and well-established clinical measures. If a causal chain can be established that links iodine and thyroid hormone to risk of CP, the potential for introducing very cost-effective ways of reducing the burden of CP will be considerable.

PMID: 19007683 [PubMed - in process]

**3: Acta Paediatr. 2008 Nov 11. [Epub ahead of print]**

**Therapy in a subtropical climate for children with cerebral palsy. Evidence of physical and psychosocial effects?**

Skjeldal OH, Capjon H, Dahl A, Diseth TH.

Section for Treatment Abroad, Department of Rheumatology, Rikshospitalet-Radiumhospitalet Medical Centre, Oslo, Norway.

Aim: To assess a possible therapeutic effect in children and adolescents with cerebral palsy of a habilitation programme in a warm sunny climate. Methods: Fifty-seven children and adolescents with cerebral palsy, all integrated with normal functioning children through mainstream schooling, received an individualized four-week habilitation programme at a habilitation centre in Lanzarote in the Canary Islands. They were clinically assessed before and after treatment, and again after three and six months. The clinical tests included gross motor function measure (GMFM) and the paediatric evaluation of disability inventory (PEDI). Mental health and self-esteem were assessed by using the youth self report (YSR), the child behaviour checklist (CBCL) and the Harter's self-perception profile. We also used focus-group interviews on all 57 parents by the end of the treatment period. Results: The study revealed some improvements in the level of physical performance. The most striking finding, however, was the lasting effect on behavioural and emotional parameters and the children's self-esteem. Conclusion: Training in a warm climate may explain some of this positive effect. However, based on the focus-group interviews and its quantitative findings a more plausible explanation may be the interaction in a social setting with others in a similar situation.

PMID: 19006523 [PubMed - as supplied by publisher]

**4: Int J Hematol. 2008 Nov 11. [Epub ahead of print]**

**Increased incidence of iron deficiency anemia secondary to inadequate iron intake in institutionalized, young patients with cerebral palsy.**

Papadopoulos A, Ntaios G, Kaiafa G, Girtovitis F, Saouli Z, Kontoninas Z, Diamantidis MD, Savopoulos C, Hatzitolios A.

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We observed high incidence of anemia in patients with cerebral palsy sheltered in a specialized institution in Thessaloniki, Greece. Therefore, we decided to investigate its cause. We studied 108 patients, and assessed complete blood cell count, peripheral blood smear, serum iron, ferritin, folate, B12 and the presence of hemoglobin or parasites in the stools. In all cases, anemia was hypochromic and microcytic. Approximately 33% of patients suffered from hypochromic anemia, whereas 38% were iron deficient. There was no statistical difference in the incidence of iron deficiency between different age groups. All tests for fecal occult blood or intestinal parasites were negative. Folic acid and B12 levels were within normal range in all cases. We also found that 87 and 95.6% of patients on liquid diet were anemic and iron deficient, respectively, compared to only 18.8 and 22.3% of patients on normal diet. The high incidence of anemia was attributed to iron deficiency which was secondary to inadequate iron intake and decreased iron absorption. Thus, it would not be irrational to consider iron supplementation as the first measure in such patients and postpone endoscopic procedures for a later stage, unless there are clinical or laboratory findings (such as fecal occult blood) suggestive of gastrointestinal blood loss.

PMID: 18991057 [PubMed - as supplied by publisher]

**5: Acta Paediatr. 2008 Nov 7. [Epub ahead of print]**

**Hospitalization in adolescence affects the likelihood of giving birth: a Swedish population-based register study.**

Selling KE, Carstensen J, Finnström O, Josefsson A, Sydsjö G.

Department of Clinical and Experimental Medicine, Division of Obstetrics and Gynaecology, Faculty of Health Sciences, Linköping University, Linköping, Sweden.

**Aim:** To examine the effect of hospitalization during adolescence on the likelihood of giving birth. **Methods:** 142 998 women born in 1973-75 were followed with the help of the Swedish Medical Birth Register (MBR) and the Swedish Total Population Register (TPR) up until the end of 2000 with respect to their likelihood of giving birth. All analyses were adjusted for parental socio-economic characteristics and factors related to the studied women's own birth. **Results:** The likelihood of giving birth between 20 and 27 years of age was positively affected by hospitalization at least once during adolescence according to the Swedish Hospital Discharge Register (HDR); adjusted hazard ratio (HR) = 1.32, 95% confidence interval: 1.29-1.35. Women hospitalized due to genitourinary diseases, respiratory diseases, abdominal problems and abuse of alcohol and drugs were more likely to have given birth during the study period, while hospitalizations according to cerebral palsy and congenital malformations tended to decrease childbearing. Women hospitalized due to psychiatric diseases had an increase likelihood of given birth at 20-24 years but a reduced thereafter. **Conclusion:** A majority of the causes of hospitalization during adolescence increased the likelihood of giving birth between ages 20 to 27.

PMID: 19006525 [PubMed - as supplied by publisher]

**6: Arch Phys Med Rehabil. 2008 Nov;89(11):2213-7.**

**Task-specific rehabilitation of finger-hand function using interactive computer gaming.**

Szturm T, Peters JF, Otto C, Kapadia N, Desai A.

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The present case study assessed the feasibility of using an interactive gaming system, coupled with the manipulation of common objects, as a form of repetitive, task-specific movement therapy. Three adults with moderate chronic motor impairments of the fingers and hand participated: one 36-year-old man with an incomplete cervical spinal cord injury, one 60-year-old man with a left cortical cerebro-vascular accident, and one 38-year-old woman with left hemiplegic cerebral palsy. Each subject received an intervention of 15 one-hour sessions, which consisted solely of interactive exercise gaming using a diverse range of objects. The objects provided graded and challenging training levels, which emulated the functional properties of objects used in daily life. This in turn produced positive effects on the recovery of active finger range of motion and hand function.

Publication Types:  
Research Support, Non-U.S. Gov't

PMID: 18996252 [PubMed - in process]

**7: Arch Phys Med Rehabil. 2008 Nov;89(11):2108-13.**

**Comparison of botulinum toxin type a injection and soft-tissue surgery to treat hip subluxation in children with cerebral palsy.**

Yang EJ, Rha DW, Kim HW, Park ES.

Department and Research Institute of Rehabilitation Medicine, Yonsei University College of Medicine, Seoul, South Korea.

**OBJECTIVE:** To compare the effects of botulinum toxin type A (BTX-A) injection into the hip adductor muscles on hip displacement with soft-tissue surgery and assess the factors related to a favorable outcome after intervention in children with bilateral spastic cerebral palsy (CP). **DESIGN:** Retrospective chart review with regard to radiographic findings. **SETTING:** University hospital. **PARTICIPANTS:** Children with CP (N=194). **INTERVENTIONS:** BTX-A injection and soft-tissue surgery into the hip adductor muscles. **MAIN OUTCOME MEASURE:** The Reimers hip migration percentage (MP). **RESULTS:** Sixty-nine children did not receive any therapeutic intervention for hip displacement, whereas 60 children underwent soft-tissue surgery and 65 children took BTX-A injection for the spasticity of their hip muscles. MP was measured on each radiograph of the pelvis. The annual change of MP was improved in both the soft-tissue surgery and BTX-A groups, whereas it worsened in the nonintervention group. The annual improvement of MP in the BTX-A group did not differ significantly from that of the soft-tissue surgery group. The improvement in hip displacement after therapeutic intervention was greater in young children and high-functioning groups compared with older children and low-functioning groups. Hip displacement was progressive in the severely hip subluxated group despite therapeutic intervention. **CONCLUSIONS:** Comparable effects of BTX-A injection to soft-tissue surgery in our study suggest that BTX-A injection, if timely reinjected, may replace soft-tissue surgery as a prophylactic procedure against progressive hip subluxation or dislocation in children. Age at intervention, functional level, and initial MP before therapeutic intervention were the factors affecting the outcomes.

PMID: 18996239 [PubMed - in process]

**8: Curr Sports Med Rep. 2008 Nov-Dec;7(6):353-8.**

**Physical activity recommendations for children and adolescents with chronic disease.**

Morris PJ.

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Youth with low physical activity and fitness levels and high body fat levels are more likely to develop additional risk factors for cardiovascular disease, such as elevated blood pressure and serum cholesterol levels. Participation in daily physical activity can reduce body fat, encourage weight loss, and improve aerobic fitness in youth without disabilities. Recent research involving youth with cerebral palsy, spinal cord injury, cystic fibrosis, asthma, diabetes, juvenile idiopathic arthritis, and hemophilia suggest positive effects of exercise therapy upon the aerobic capacity, functional ability, and quality of life of children and adolescents with disabilities and chronic diseases. Strategies exist for introducing exercise as a lifelong intervention in pediatric populations with chronic diseases.

PMID: 19005359 [PubMed - in process]

**9: Neuropsychology. 2008 Nov;22(6):755-64.**

**Less efficient elementary visuomotor processes in 7- to 10-year-old preterm-born children without cerebral palsy: an indication of impaired dorsal stream processes.**

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Follow-up studies of preterm children without serious neurological complications have consistently found deficits in visuomotor skills. To determine whether these deficits may be related to impaired elementary visuomotor processes, we investigated movement programming and execution of simple pointing movements in 7- to 10-year-old preterm (<34 weeks g.a. and/or b.w. <1800 g) and full-term children. Such detailed analysis of simple pointing movements provides information on the extent to which processes associated with dorsal and/or cerebellar functions are impaired. Multi-level analysis showed that movement programming and execution were slowed in the 7-, 9-, and 10-year-old preterm groups. This indicates impaired dorsal visual stream functioning in preterm children, but do not rule out impaired cerebellar functioning. At 8 years of age, there were no differences between the two groups in movement execution time. This could have reflected a transition in the development of movement control in the control group, which has been associated in typically developing children with a decrease in motor speed. Interestingly, a similar decrease was not found in the preterm group at 8 years of age.

Publication Types:  
Research Support, Non-U.S. Gov't

PMID: 18999349 [PubMed - in process]

**10: Child Care Health Dev. 2008 Oct 30. [Epub ahead of print]**

**Sleep problems and the need for parental night-time attention in children with physical disabilities.**

Hemmingsson H, Stenhammar AM, Paulsson K.

Karolinska Institutet, Department of Neurobiology, Caring Sciences and Society, Division of Occupational Therapy, Huddinge, Sweden.

**Background** The aim of the study was to investigate the frequency and predictors of sleep problems and the need for parental night-time attention in children with physical disabilities. **Methods** A questionnaire on sleep problems and need for parental night-time attention was completed by 505 parents of children with physical disabilities aged 1-16 years (mean 9 years 3 months) with moderate to severe motor disabilities. General characteristics of the children were analysed by frequencies and cross-tabulations. Logistic regression analysis was used to identify factors associated with sleep problems and the need for parental night-time attention. **Results** The results showed a high prevalence of sleep problems, which in general were chronic. Currently 48% of the children had sleep problems, of which 23% estimated the problems to be serious. About one-third (37%) needed parental night-time attention every night, and 10% needed help five times or more. No significant differences were found between younger children and school-aged children regarding sleep problems and the need for parental night-time attention. Having pain [odds ratio (OR) = 3.4] was associated with sleep problems, as was having problems eating and drinking (OR = 3) and the diagnosis of cerebral palsy (OR = 2.5) ( $P < 0.05$ ). Children with muscular dystrophy (OR = 68.5), cerebral palsy (OR = 26.7) and 'other diagnosis' (OR = 18.5) were more likely to need support at night than were children with spina bifida,  $P < 0.001$ . Pain (OR = 7.6) was also associated with need for support at night,  $P < 0.001$ . **Conclusions** The prevalence of sleep problems and need for parental night-time attention is high among children with physical disabilities. This in turn affects the whole family, and paediatric caregivers must keep this in mind. Besides certain diagnoses, the results suggest that children who have pain should be prioritized.

PMID: 18991967 [PubMed - as supplied by publisher]

**11: Child Care Health Dev. 2008 Oct 20. [Epub ahead of print]**

**Maternal parenting stress and its correlates in families with a young child with cerebral palsy.**

Glenn S, Cunningham C, Poole H, Reeves D, Weindling M.

Faculty of Health and Applied Social Sciences, Liverpool John Moores University, Liverpool, UK.

**Objective** To investigate factors predicting parenting stress in mothers of pre-school children with cerebral palsy. **Method** Eighty mothers and children participated. Mothers completed the Parenting Stress Index (PSI) and the following measures of family functioning: family support, family cohesion and adaptability, coping strategies, family needs and locus of control. Children were assessed using the Griffiths Scales and the Gross Motor Function measure. The child's home environment was assessed using Home Observation for Measuring the Environment. **Results** Mothers had higher mean total PSI scores than the means for the typical sample; 43% had total PSI scores above the threshold for clinical assessment. Cluster analysis demonstrated five distinct clusters of families, more than half of whom were coping well. High stress items were role restriction, isolation and poor spouse support, and having a child who was perceived as less adaptable and more demanding. Lower stress items indicated that this sample of mothers found their children emotionally reinforcing and had close emotional bonds. Regression analysis showed that the factors most strongly related to parenting stress levels were high family needs, low family adaptability and cognitive impairment in the child. **Conclusions** The results confirmed the individuality of families, and that individual characteristics of coping and feeling in control, together with family support and cohesion, are associated with variation in amount of stress experienced in parenting a child with cerebral palsy.

PMID: 18991973 [PubMed - as supplied by publisher]

**12: Child Care Health Dev. 2008 Oct 20. [Epub ahead of print]**

**Assistive devices and cerebral palsy: factors influencing the use of assistive devices at home by children with cerebral palsy.**

Huang IC, Sugden D, Beveridge S.

School of Education, University of Leeds, Leeds, UK.

**Background** There is a growing awareness of the significance of gaining insights into device users' needs in their everyday usage in order to maximize the potential of assistive device intervention. However, current studies in this field are likely to focus more upon adult users' or adult carers' perspectives and, accordingly, the opinions of young users seem to be overlooked. In order to take the gap into consideration, this study aimed to explore the usability of assistive devices at home by children with cerebral palsy and consider the underlying factors related to the device usage in this setting mainly from the children's perspectives. **Methods** Semi-structured interviews were adopted as the main data collection instrument. A total of 30 participants were involved in the study, including 15 Taiwanese children with cerebral palsy and 15 mothers. **Results** The results showed a low frequency of device use at home by the participating children. Four factors leading to low device use at home were identified, including children's reluctance, mothers' perspectives, physical environmental barriers and device-related barriers. **Conclusions** The results highlight the need, when considering the usability of assistive devices, to take into account three interactive factors, namely, the personal, device and environmental factors. They also demonstrate the importance of taking children's different developmental stages and unique personal experiences into consideration in understanding the influence of assistive device intervention for children with cerebral palsy.

PMID: 18991969 [PubMed - as supplied by publisher]

**13: J Hand Ther. 2008 Oct-Dec;21(4):386-97.**

**Pre- and postsurgical evaluation of hand function in hemiplegic cerebral palsy: exemplar cases.**

Wesdock KA, Kott K, Sharps C.

Motion Analysis Laboratory at Children's Hospital, Richmond, Virginia.

Evaluation of hand function for treatment planning and outcome documentation in individuals with cerebral palsy (CP) proves challenging. Because of the complexity of multisystem involvement and time constraints during physician clinic visits, we developed a comprehensive evaluation protocol to assist with team surgical decision making in CP. We report findings from three adolescents with hemiplegic CP who were evaluated pre-/post-intervention using measures of impairment (clinical examination procedures), activity (Pediatric Evaluation of Disability Inventory and Jebsen-Taylor Test of Hand Function), and participation (goal attainment scaling). An intervention to improve hand function consisted of single-event multilevel orthopedic surgery and postsurgical therapy. Wrist/finger biomechanics and active range of motion improved after the intervention. The targeted surgical intervention and undefined therapy intervention, however, seemed to have little influence on activity and participation. The descriptive results of these exemplar cases suggest that, instead of assisting only with surgical decision making, the evaluation protocol should focus on specific postsurgical therapy plans in addition to surgical/therapy decision making.

PMID: 19006765 [PubMed - in process]

**14: Rev Urol. 2008 Summer;1(3):148.**

**Cerebral palsy and genetic predisposition.**

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