Cerebral Palsy Alliance

NEWS
Cerebral Palsy Research

Monday 3 March 2014

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Interventions and Management

1. J Phys Ther Sci. 2014 Jan;26(1):63-6. doi: 10.1589/jpts.26.63. Epub 2014 Feb 6.

Relationship between Lower Limb Muscle Structure and Function in Cerebral Palsy.

Ko IH, Kim JH, Lee BH.

Purpose: The purpose of the study was to provide information for intervention by comparing lower limb muscle thickness, gross motor function and functional level of activity daily living between cerebral palsy (CP) and mental retardation (MR). Subjects: Sixty subjects participated: 38 CP and 9 MR subjects and 13 normally developing infants. Methods: Ultrasonography and a manual muscle tester were used for measuring the thickness and strength of knee extensor and ankle plantar flexor muscles. The Gross Motor Function Measure (GMFM) and Wee Functional Independence Measure (WeeFIM) were used to evaluate level of gross motor and independence level. Results: Knee extensor thicknesses of CP and MR subjects were thinner than those of normally developing infants. Strengths of knee extensor and ankle plantar flexor showed differences being strongest in normally developing infants, followed by MR, and CP. Subjects in the examination of GMFM, there were no significant differences between CP and MR. A decline in social cognition of MR subjects was found in the examination of WeeFIM. Conclusion: CP and MR subjects had smaller muscle thicknesses and strengths than those of normally developing infants, and lower gross motor function and functional independent level.

PMID: 24567677 [PubMed] Free PMC Article

2. J Phys Ther Sci. 2014 Jan;26(1):145-8. doi: 10.1589/jpts.26.145. Epub 2014 Feb 6.

Effect of the modulation of optic flow speed on gait parameters in children with hemiplegic cerebral palsy.

Lim H.

Purpose: We investigated the effects of modulation of the optic flow speed on gait parameters in children with hemiplegic cerebral palsy. Methods: We examined 10 children with hemiplegic cerebral palsy. The children underwent gait analysis under 3 different conditions of optic flow speed: slow, normal, and fast optic flow speed. The children walked across the walkway of a GAITRite system, while watching a virtual reality screen, and walking velocity, cadence, stride length, step length, single support time, and double support time were recorded. Results: Compared with the other applied flow speed conditions, the fast optic flow speed (2 times the normal speed) significantly increased walking velocity, cadence, normalized step length, base of support, and single support cycle

of both the paretic and non-paretic lower limbs. Moreover, compared with the other applied flow speed conditions, the slow optic flow speed (0.25 times the normal speed) yielded a significantly decreased walking velocity, cadence, normalized step length, base of support, and single support cycle for both the paretic and non-paretic lower limbs. Conclusion: The gait parameters of children with hemiplegic cerebral palsy are altered by modulation of the optic flow speed. Thus, we believe that gait training involving modulation of the optic flow speed is feasible and suitable for resolving abnormal gait patterns in children with hemiplegic cerebral palsy.

PMID: 24567695 [PubMed] Free PMC Article

3. Disabil Rehabil. 2014 Feb 24. [Epub ahead of print]

"Strong and steady": a community-based strength and balance exercise group for children with cerebral palsy.

Auld ML1, Johnston LM.

Purpose: This study investigated the effect of an eight-week community-based strength and balance exercise group for children with cerebral palsy (CP). Method: Ten children with CP participated in the study (8-15 years; six male; GMFCS I=6, II=4; five diplegia; five hemiplegia). Muscle strength was assessed using dynamometry and functional strength tests (seated throw, distance jump, vertical jump). Balance was assessed using the Bruninks-Oseretsky Test of Motor Proficiency, the Movement Assessment Battery for Children (MABC), lateral and forward reach tests and the Timed-up and Go. Results: Muscle strength improved in dominant side elbow flexors, hip abductors, ankle dorsiflexors and ankle plantarflexors ($p=0.018$-0.042). Functional strength improved in seated throw ($t=2.7$; $p=0.024$), distance jump ($t=-2.8$; $p=0.025$) and lateral step-up ($p<0.05$). Balance improved on the MABC ($t=2.4$; $p=0.040$), lateral ($p<0.05$) and forward reach ($p<0.05$). Conclusion: This feasibility study translated research into sustainable practice, showing that a community-based, low dose, group exercise program can improve the balance and strength of children with CP within current funding capacity. Implications for Rehabilitation It has been known that strength and balance training in the clinical research setting with specialized equipment is effective for children with CP, but this study demonstrates the translation of research into clinical practice in a low-cost, low-dose group program. Significant gains in both muscle strength and balance can be achieved in an eight-week community-based gym group using simple equipment.

PMID: 24564328 [PubMed - as supplied by publisher]

4. Pediatr Neurosurg. 2014 Feb 21. [Epub ahead of print]

Complications of Intrathecal Baclofen Pumps in Children: Experience from a Tertiary Care Center.

Ghosh D1, Mainali G, Khera J, Luciano M.

Background/Aims: Intrathecal baclofen (ITB) therapy is useful in treating spasticity and dystonia but it has many complications, more so in children. The main aim of the study was to look at the complications of ITB pumps in children with the goal of future prevention. Methods: Charts of all patients =21 years with an ITB pump, implanted by a single pediatric neurosurgeon, at a single center, between 1996 and 2011 were reviewed retrospectively. Data regarding an ITB test trial were also recorded. Results: During 1996-2011, 119 children (mean age 13.2 years) underwent ITB pump placement; 84% had spastic quadriplegic cerebral palsy. The gross motor function classification system level was =4 for most. The pump was removed in 5 (4.2%) patients due to inefficacy. The mean follow-up was 38 months. Mechanical complications requiring pump and/or catheter revision occurred in 19.3% and infections in an additional 21.8%. Seven patients (6%) had meningitis. No complication was noted after 72 months of initial pump insertion, even after pump reinsertion. Conclusion: There is a need for better infection control as well as better pump, catheter and surgical technology to lower the complications of ITB pumps in children. © 2014 S. Karger AG, Basel.

PMID: 24577095 [PubMed - as supplied by publisher]

5. Dev Med Child Neurol. 2014 Feb 27. doi: 10.1111/dmcn.12427. [Epub ahead of print]

Can goal setting be isolated from activity-focused intervention in cerebral palsy

Wallen M1, Hoare B.

PMID: 24575899 [PubMed - as supplied by publisher]

6. Dev Med Child Neurol. 2014 Feb 27. doi: 10.1111/dmcn.12388. [Epub ahead of print]

Measuring the effectiveness of interventions for children with cerebral palsy.

Williams E.

PMID: 24571081 [PubMed - as supplied by publisher]

Prevention and Cure

7. Acta Paediatr. 2014 Feb 27. doi: 10.1111/apa.12614. [Epub ahead of print]

The panorama of cerebral palsy in Sweden. XI. Changing patterns in the birth-year period 2003-2006.

Himmelmann K1, Uvebrant P.

AIM: To describe the epidemiology of cerebral palsy (CP) in western Sweden. METHODS: A population-based study covering 94,466 live births in the area in 2003-2006. Birth characteristics and neuroimaging findings were recorded, prevalence was calculated and aetiology was analysed. RESULTS: CP was found in 206 children, including postneonatal cases, corresponding to a crude prevalence of 2.18 per 1,000 live births. The gestational age-specific prevalence for < 28 gestational weeks was 71.4 per 1,000 live births, while it was 39.6 for 28-31 weeks, 6.4 for 32-36 weeks and 1.41 per 1,000 for > 36 weeks. Hemiplegia accounted for 44%, diplegia for 29% and tetraplegia for 6%, while 16% had dyskinetic CP and 5% had ataxia. Neuroimaging was available in 95% of the children. This showed maldevelopment in 13%, white-matter lesions in 36%, cortical/subcortical lesions in 23% and basal ganglia lesions in 14%. The aetiology was considered to be prenatal in 36% and peri/neonatal in 46% and remained unclassified in 18%. CONCLUSION: The overall prevalence of CP in western Sweden was stable. However, the distribution of CP types changed and the term hemiplegia increased significantly. Among children with CP born extremely preterm, the percentage born before 26 weeks of gestation had increased. This article is protected by copyright. All rights reserved.

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