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Interventions and Management

1. *Am J Occup Ther.* 2013 Jul-Aug;67(4):413-24. doi: 10.5014/ajot.2013.005959.

Systematic review of interventions used in occupational therapy to promote motor performance for children ages birth-5 years.

Case-Smith J, Frolek Clark GJ, Schlabach TL.

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We examined the research evidence for interventions used in occupational therapy to promote the motor performance of young children ages 0-5 yr. We identified 24 trials, Levels I-III, that met our review criteria. The studies fell into three categories: (1) developmental interventions for infants (ages 0-3 yr), (2) interventions for young children with or at risk for cerebral palsy (CP), and (3) visual-motor interventions for preschool children (ages 3-5 yr). Developmental interventions showed low positive short-term effects with limited evidence for long-term effects, and findings on the benefits of neurodevelopmental treatment were inconclusive. Interventions using specific protocols for children with CP resulted in positive effects. Visual-motor interventions for children with developmental delays (ages 3-5 yr) resulted in short-term effects on children's visual-motor performance. Of the intervention approaches used in occupational therapy, those that embed behavioral and learning principles appear to show positive effects.

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2. *Res Dev Disabil.* 2013 Jun 19;34(9):2810-2830. doi: 10.1016/j.ridd.2013.05.031. [Epub ahead of print]

Quality and structure of variability in children during motor development: A systematic review.

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Variability has been perceived to be beneficial to movement organization and execution, being essential to selection of movement patterns during motor development, to obtain flexible patterns and adaptability to different task demands. Human movement variability can be measured by linear and nonlinear tools. Recently, nonlinear techniques have been used successfully to give insight into motor skills control in children, and be able to discriminate pathologic and non-pathologic children. For that, this paper is the first to review systematically studies that used nonlinear measures in children. We intend to describe which mathematical tools are utilized to analyze quality and structure of variability, the factors that influence this variability and methodological procedures which are considered for its analysis, and how they are interpreted in child motor development field. A search was performed by one reviewer in relevant databases and the quality appraisal was conducted independently by two reviewers. In all, 27 articles were identified and 20 were selected for the present review. It was detected a large variation in sample characteristics and methodological issues among studies. In fact, the main importance of this review was due to the attempt to define some parameters and standardize some values for typical children and children with disabilities. It is noted that the results from nonlinear techniques depend on the task being analyzed, the age and the type of mathematical technique chosen. The presence of disability is associated to decreases in complexity and nonlinear tools were considered sensible to investigate the effectiveness of practice and intervention in typical children and children with cerebral palsy. Furthermore, future studies should be more careful in standardizing selection, recruitment and explaining missing data. Future reports also should present details of their results and limitations to favor comparisons and helping in formulating new research questions.

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3. Arch Phys Med Rehabil. 2013 Jun 21. pii: S0003-9993(13)00454-1. doi: 10.1016/j.apmr.2013.05.023. [Epub ahead of print]

The six minute walk test cannot predict peak cardiopulmonary fitness in ambulatory adolescents and young adults with cerebral palsy.

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OBJECTIVE: To determine whether the 6-minute walk test predicts peak oxygen uptake and whether the 6-minute walk test is a clinically applicable alternative to cardiopulmonary exercise testing in ambulatory adolescents and young adults with cerebral palsy **DESIGN:** Cross-sectional **SETTING:** University hospital and rehabilitation centers **PARTICIPANTS:** Forty-one adolescents and young adults with cerebral palsy classified in GMFCS level I or II. **INTERVENTIONS:** Not applicable. **MAIN OUTCOME MEASURES:** The covered distance during 6 minutes was measured with a 6-minute walk test. Peak oxygen uptake was obtained with cardiopulmonary exercise testing on a cycle ergometer. **RESULTS:** Univariate linear regression analysis was used to study the relationship between the outcomes of both tests. A multiple linear regression analysis was performed to determine whether peak oxygen uptake could be predicted by the 6-minute walk test, sex, body mass and GMFCS level. A significant relationship ($p < 0.01$) was found between the outcomes of the 6-minute walk test and cardiopulmonary exercise test with an explained variance of 21%. The multiple linear regression analysis showed an explained variance of 58% and a standard error of estimate corresponding to 18% of the mean peak oxygen uptake. **CONCLUSIONS:** The 6-minute walk test is poorly related to peak oxygen uptake in ambulatory adolescents and young adults with CP. Due to a high standard error of estimate, the multiple regression model did not allow for prediction of peak oxygen uptake from the 6-minute walk test in ambulatory adolescents and young adults with cerebral palsy.

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4. Brain Dev. 2013 Jun 18. pii: S0387-7604(13)00172-1. doi: 10.1016/j.braindev.2013.05.008. [Epub ahead of print]

Lower limb muscle volumes in bilateral spastic cerebral palsy.

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Aim: Muscle weakness is a feature of individuals with spastic cerebral palsy (SCP) but there are few reports in the literature of muscle volume in this group. This study compares muscle volumes in adolescents and young adults with SCP with those of their typically developing (TD) peers. **Design:** Measurements of the volumes of nine major lower limb muscles in 19 independently ambulant subjects with SCP (mean age 14.2 years (sd 2.7), 11 male, GMFCS I (n=5); GMFCS II (n=14)), 19 TD subjects (mean age 16.5 years (sd 3.0), 11 male) were made using magnetic resonance imaging. **Results:** Lower limb muscles were smaller in the SCP group ($p \leq 0.023$ in all muscles) than the TD group with the exception of the vastii (lateralis+intermedius; $p=0.868$) and gluteus maximus ($p=0.056$). Average muscle volume deficit was 27.9%. Muscle volume deficits were significantly greater for distal muscles than proximal muscles ($p < 0.001$). **Conclusions:** Reduced muscle size in adolescence and the natural history of sarcopenia in adulthood may contribute to the early loss of mobility of adults with SCP.

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5. Dev Med Child Neurol. 2013 Jun 25. doi: 10.1111/dmcn.12193. [Epub ahead of print]

Measurement of physical activity in children and adolescents with cerebral palsy: the way forward.

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6. Gait Posture. 2013 Jun 19. pii: S0966-6362(13)00252-X. doi: 10.1016/j.gaitpost.2013.05.018. [Epub ahead of print]

Instrumented assessment of the effect of Botulinum Toxin-A in the medial hamstrings in children with cerebral palsy.

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This study examined the sensitivity of an instrumented spasticity assessment of the medial hamstrings (MEH) in children with cerebral palsy (CP). Nineteen children received Botulinum Toxin type A (BTX-A) injections in the MEH. Biomechanical (position and torque) and electrophysiological (surface electromyography, EMG) signals were integrated during manually-performed passive stretches of the MEH at low, medium and high velocity. Signals were examined at each velocity and between stretch velocities, and compared pre and post BTX-A (43±16 days). Average change between pre and post BTX-A was interpreted in view of the minimal detectable change (MDC) calculated from previously published reliability results. Improvements greater than the MDC were found for nearly all EMG-parameters and for torque parameters at high velocity and at high versus low velocity ($p < 0.03$), however large inter-subject variability was noted. Moderate correlations were found between the improvement in EMG and in

torque ($r=0.52$, $p<0.05$). Biomechanical and electrophysiological parameters proved to be adequately sensitive to assess the response to treatment with BTX-A. Furthermore, studying both parameters at different velocities improves our understanding of spasticity and of the physiological effect of selective tone-reduction. This not only provides a clinical validation of the instrumented assessment, but also opens new avenues for further spasticity research.

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7. *Dev Med Child Neurol.* 2013 Jun 22. doi: 10.1111/dmcn.12200. [Epub ahead of print]

Muscle volume alterations in spastic muscles immediately following botulinum toxin type-A treatment in children with cerebral palsy.

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AIM: With evidence for an atrophic effect of botulinum toxin type A (BoNT-A) documented in typically developing muscles, this study investigated the immediate morphological alterations of muscles in children with cerebral palsy (CP) after BoNT-A treatment. **METHOD:** Fifteen children (10 males, five females; age range 5-11y, mean age 8y 5mo, SD 1y 10mo) with spastic diplegic CP [Gross Motor Function Classification System Levels I (n=9) and II (n=6)] receiving BoNT-A injections for spasticity management were included. None of the children was a first-time receiver of BoNT-A. Magnetic resonance imaging and Mimics software assessed muscle volume, timed 2 weeks before and 5 weeks after injection. All participants received BoNT-A bilaterally to the gastrocnemius muscle, and five participants also received BoNT-A bilaterally to the medial hamstring muscles. Functional assessment measures used were the 6-Minute Walk Test (6-MWT), the Timed Up and Go (TUG) test, and hand-held dynamometry. **RESULTS:** Whilst total muscle group volume of the injected muscle group remained unchanged, a 4.47% decrease in the injected gastrocnemius muscle volume ($p=0.01$) and a 3.96% increase in soleus muscle volume ($p=0.02$) was evident following BoNT-A. There were no statistically significant changes in function after BoNT-A as assessed by the TUG. There was also no statistically significant change in distance covered in the 6-MWT. Muscle strength, as assessed using hand-held dynamometry was also not statistically different after BoNT-A treatment. **INTERPRETATION:** Muscle volume decreases were observed in the injected muscle (gastrocnemius), with synergistic muscle hypertrophy that appeared to compensate for this decrement. The 4% to 5% decrease in the volume of BoNT-A injected muscles are not dramatic in comparison to reports in recent animal studies, and are a positive indication for BoNT-A, particularly as it also did not negatively alter function.

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8. *Dev Med Child Neurol.* 2013 Jun 22. doi: 10.1111/dmcn.12190. [Epub ahead of print]

Progressive resistance training and mobility-related function in young people with cerebral palsy: a randomized controlled trial.

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AIM: The aim of this study was to investigate whether individualized resistance training improves the physical mobility of young people with cerebral palsy (CP). **METHOD:** Forty-eight participants with spastic diplegic CP (26 males, 22 females; mean age 18y 1mo, SD 1y 11mo) classified as level II or III on the Gross Motor Function Classification System were allocated randomly to progressive resistance training or usual-care control. Resistance training was completed twice weekly for 12 weeks at a community gymnasium under the supervision of a physiotherapist. Exercises were based on instrumented gait analysis and targeted muscles contributing to walking difficulties. Outcomes at 12 weeks and 24 weeks included objective measures of mobility (6-min walk test,

instrumented gait analysis, and Gross Motor Function Measure dimensions D and E), participant-rated measures of mobility (Functional Mobility Scale and Functional Assessment Questionnaire), and muscle performance.

RESULTS: The strength of targeted muscles increased by 27% (95% CI 8-46%) compared with control group. There were no between-group differences in any objective measure of mobility at 12 weeks (6-min walk test: mean difference 0.1m; 95% CI -21 to 21m) or at 24 weeks. Participant-rated mobility improved (Functional Mobility Scale at 5m: mean 0.6 units; 95% CI 0.1-1.1 units; Functional Assessment Questionnaire: 0.8 units; 95% CI 0.1-1.6 units) compared with control group at 12 weeks. **INTERPRETATION:** Individualized progressive resistance training increased strength in adolescents and young adults with spastic diplegic CP. Despite participant-rated benefits, the increased strength did not result in objective improvements in mobility.

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9. Disabil Rehabil. 2013 Jun 26. [Epub ahead of print]

The efficacy of GMFM-88 and GMFM-66 to detect changes in gross motor function in children with cerebral palsy (CP): a literature review.

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Aim: The purpose of this study was to review published research on the use of the Gross Motor Function Measure (GMFM-88) and (GMFM-66) as outcome measures to determine if these tools detect changes in gross motor function in children with cerebral palsy (CP) undergoing interventions. **Methods:** A comprehensive literature search was conducted using Medline and PubMed to identify studies published from January 2000 through January 2011 that reported the accuracy of GMFM-88 and GMFM-66 to measure changes over time in children with CP undergoing interventions. The keywords used for the search were "GMFM" and "CP". Two of the authors (M.A. and S.B.) reviewed the titles and abstracts found in the databases. The methodological quality of the studies was assessed by using the Critical Review Form-Quantitative Studies. **Results:** Of 62 papers initially identified, 21 studies fulfilled the inclusion criteria. These articles consist of three longitudinal studies, six randomized controlled trials, four repeated measure design, six pre-post test design, a case series and one non-randomized prospective study. The included studies were generally of moderate to high methodological quality. The studies included children from a wide age range of 10months to 16years. According to the National Health and Medical Research Council, the study designs were level II, III-2, III-3 and IV. **Conclusion:** The review suggests that the GMFM-88 and GMFM-66 are useful as outcome measures to detect changes in gross motor function in children with CP undergoing interventions. Implications for Rehabilitation Accurate measurement of change in gross motor skill acquisition is important to determine effectiveness of intervention programs in children with cerebral palsy (CP). The Gross Motor Function Measure (GMFM-88 and GMFM-66) are common tools used by rehabilitation specialists to measure gross motor function in children with CP. The GMFM appears to be an effective outcome tool for measuring change in gross motor function according to a small number of randomized control studies utilizing participant populations of convenience.

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10. Indian J Orthop. 2013 May;47(3):319.

Author's reply in response to letter to editor Indian J Orthop 2012;46:602 titled "Utility of combined abduction angle for hip surveillance in children with cerebral palsy".

Divecha A, Bhaskar A.

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[PMID: 23798769](#) [PubMed] PMCID: PMC3687915

11. Front Hum Neurosci. 2013 Jun 24;7:276. doi: 10.3389/fnhum.2013.00276. Print 2013.

Reduction of pain sensitivity after somatosensory therapy in adults with cerebral palsy.

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Objective: Pain and deficits in somatosensory processing seem to play a relevant role in cerebral palsy (CP). Rehabilitation techniques based on neuroplasticity mechanisms may induce powerful changes in the organization of the primary somatosensory cortex and have been proved to reduce levels of pain and discomfort in neurological pathologies. However, little is known about the efficacy of such interventions for pain sensitivity in CP individuals. **Methods:** Adults with CP participated in the study and were randomly assigned to the intervention (n=17) or the control group (n=20). The intervention group received a somatosensory therapy including four types of exercises (touch, proprioception, vibration, and stereognosis). All participants were asked to continue their standardized motor therapy during the study period. Several somatosensory (pain and touch thresholds, stereognosis, proprioception, texture recognition) and motor parameters (fine motor skills) were assessed before, immediately after and 3 months after the therapy (follow-up). **Results:** Participants of the intervention group showed a significant reduction on pain sensitivity after treatment and at follow-up after 3 months, whereas participants in the control group displayed increasing pain sensitivity over time. No improvements were found on touch sensitivity, proprioception, texture recognition, or fine motor skills. **Conclusion:** Data suggest the possibility that somatosensory therapy was effective in eliciting changes in central somatosensory processing. This hypothesis may have implications for future neuromodulatory treatment of pain complaints in children and adults with CP.

[PMID: 23805086](#) [PubMed] [PMCID: PMC3690353](#)

12. Iran J Pediatr. 2013 Jun;23(3):281-8.

Is There any Difference in Health Related Quality of Life, Self Care and Social Function in Children with Different Disabilities Living in Turkey?

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OBJECTIVE: The aim of this study was to examine the differences in the health related quality of life and the self care and social function in daily life of children with different disabilities. **METHODS:** One hundred and two children with physical, emotional and cognitive disabilities (cerebral palsy, mental retardation, and hearing loss) and 28 children age matched as a control group were included in this study for the comparison. The Pediatric Evaluation of Disability Inventory (PEDI) was used to evaluate the independence and participation of children in daily life activities. The Turkish version of the Child Health Questionnaire-Parent form (CHQ - PF50) was used to evaluate the health related quality of life. **FINDINGS:** All 3 groups were different from the control group in terms of self-care and the social domains according to the PEDI results ($P < 0.05$). Children with cerebral palsy (CP) were more dependent in the areas of self-care and mobility activities ($P < 0.05$). The main difference was found in global general health (GGH), physical functioning (PF), the emotional impact on the parent (PE) subsections of the CHQ-PF50 between the CP and the hearing loss groups; the role of the physical (RP) and emotional behavior (BE) subsections between the mental retardation (MR) and the CP groups, and the BE and mental health (MH) subsections between the MR and the hearing loss (HL) groups ($P < 0.05$). **CONCLUSION:** All the children with disabilities were different from the control group in their quality of life, self care and social function. However the status of the children with MR and HL were parallel between each other in their health related quality of life, self care and social function. On the other hand, the most affected and dependent group was children with CP. The results will provide guidelines for healthcare professionals in implementing effective rehabilitation programs, especially to those with cerebral palsy, to reduce the level of strain and increase the health related quality of life, self care and social function of children with different disabilities.

[PMID: 23795250](#) [PubMed] [PMCID: PMC3684472](#)

13. *J Pediatr Rehabil Med.* 2013 Jan 1;6(2):113-7. doi: 10.3233/PRM-130246.

Differences of respiratory function in children with spastic diplegic and hemiplegic cerebral palsy, compared with normally developed children.

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PURPOSE: The purpose of this study was to investigate differences between respiratory function in children with spastic cerebral palsy (CP) and children with normal development, and to compare respiratory function between children with spastic diplegic and those with hemiplegic CP. **METHOD:** Fourteen children with spastic diplegic CP, 14 children with spastic hemiplegic CP, and 14 normal children were enrolled, whose age, gender, height, weight, and body surface area were matched. All participants performed respiratory function tests by inhaling a breath and then blowing the entire volume through a spirometer, as deeply and rapidly as possible. **RESULTS:** In general, children with spastic diplegic CP and those with hemiplegic CP showed lower respiratory function compared to children with normal development. In comparison between children with spastic CP and those with hemiplegic CP, statistical significance was observed only in FVC, FEV₁, and PEF. **CONCLUSION:** Findings revealed significantly weaker respiratory function in children with CP as compared to normal children. In addition, children with spastic diplegic CP showed significantly lower forced expiratory function than those with spastic hemiplegic CP. Therefore, clinical assessment and therapeutic intervention for respiratory function should be carefully considered for children with spastic diplegic and hemiplegic CP.

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Diagnosis, Prevention and Cure

14. *Pediatrics.* 2013 Jun;131(6):e2016-27. doi: 10.1542/peds.2013-1056. Epub 2013 May 27.

Motor delays: early identification and evaluation.

Noritz GH, Murphy NA; NEUROMOTOR SCREENING EXPERT PANEL.

Pediatricians often encounter children with delays of motor development in their clinical practices. Earlier identification of motor delays allows for timely referral for developmental interventions as well as diagnostic evaluations and treatment planning. A multidisciplinary expert panel developed an algorithm for the surveillance and screening of children for motor delays within the medical home, offering guidance for the initial workup and referral of the child with possible delays in motor development. Highlights of this clinical report include suggestions for formal developmental screening at the 9-, 18-, 30-, and 48-month well-child visits; approaches to the neurologic examination, with emphasis on the assessment of muscle tone; and initial diagnostic approaches for medical home providers. Use of diagnostic tests to evaluate children with motor delays are described, including brain MRI for children with high muscle tone, and measuring serum creatine kinase concentration of those with decreased muscle tone. The importance of pursuing diagnostic tests while concurrently referring patients to early intervention programs is emphasized.

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15. *Am J Obstet Gynecol.* 2013 Jun 17. pii: S0002-9378(13)00631-5. doi: 10.1016/j.ajog.2013.06.023. [Epub ahead of print]

Congenital Cerebral Palsy and Prenatal Exposure to Self-reported Maternal Infections, Fever or Smoking.

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OBJECTIVE: To investigate the association between maternal self-reported infections, fever and smoking in the prenatal period and subsequent risk for congenital cerebral palsy (CP). **STUDY DESIGN:** We included the 81,066 mothers of singletons born between 1996 and 2003, who participated in the Danish National Birth Cohort. Children were followed through December 2008. Information on maternal infections, fever, smoking and other demographic and lifestyle factors during pregnancy were reported by mothers in computer-assisted telephone interviews in early and mid-gestation. We identified 139 CP cases including 121 cases of spastic CP (sCP) as confirmed by the Danish National Cerebral Palsy Register. Cox proportional hazards regression models were used to estimate adjusted hazard ratios (aHR) and 95% confidence intervals. **RESULTS:** Self-reported vaginal infections were associated with an increased risk of CP and sCP (aHR: 1.52; 95% CI: 1.04-2.24 and aHR: 1.73; 95% CI: 1.16-2.60, respectively) and particularly untreated vaginal infections were associated with an increased risk of sCP (aHR: 1.95; 95% CI: 1.16-3.26). Fever was associated with the risk of CP (aHR: 1.53; 95% CI: 1.06-2.21). Smoking 10 or more cigarettes per day during pregnancy was also associated with sCP (aHR: 1.80; 95% CI: 1.10-2.94). There was a modest excess in risk for children exposed to both heavy smoking and vaginal infections. No other self-reported infections were significantly associated with CP. **CONCLUSIONS:** Self-reported vaginal infections, fever and smoking 10 or more cigarettes per day during pregnancy were associated with a higher risk of overall CP and/or sCP.

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16. Int J Dev Neurosci. 2013 Jun 21. pii: S0736-5748(13)00101-9. doi: 10.1016/j.ijdevneu.2013.06.004. [Epub ahead of print]

Quantitative evaluation of brain development using anatomical MRI and diffusion tensor imaging.

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The development of the brain is structure-specific, and the growth rate of each structure differs depending on the age of the subject. Magnetic resonance imaging (MRI) is often used to evaluate brain development because of the high spatial resolution and contrast that enable the observation of structure-specific developmental status. Currently, most clinical MRIs are evaluated qualitatively to assist in the clinical decision-making and diagnosis. The clinical MRI report usually does not provide quantitative values that can be used to monitor developmental status. Recently, the importance of image quantification to detect and evaluate mild-to-moderate anatomical abnormalities has been emphasized because these alterations are possibly related to several psychiatric disorders and learning disabilities. In the research arena, structural MRI and diffusion tensor imaging (DTI) have been widely applied to quantify brain development of the pediatric population. To interpret the values from these MR modalities, a "growth percentile chart," which describes the mean and standard deviation of the normal developmental curve for each anatomical structure, is required. Although efforts have been made to create such a growth percentile chart based on MRI and DTI, one of the greatest challenges is to standardize the anatomical boundaries of the measured anatomical structures. To avoid inter- and intra-reader variability about the anatomical boundary definition, and hence, to increase the precision of quantitative measurements, an automated structure parcellation method, customized for the neonatal and pediatric population, has been developed. This method enables quantification of multiple MR modalities using a common analytic framework. In this paper, the attempt to create an MRI- and a DTI-based growth percentile chart, followed by an application to investigate developmental abnormalities related to cerebral palsy, Williams syndrome, and Rett syndrome, have been introduced. Future directions include multimodal image analysis and personalization for clinical application.

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17. Neurol Sci. 2013 Jun 22. [Epub ahead of print]**Functional recovery and alterations in the expression and localization of protein kinase C following voluntary exercise in rat with cerebral infarction.**

Mizutani K, Sonoda S, Wakita H, Katoh Y, Shimpo K.

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Recently, it has become widely known that rehabilitative training after stroke brings about some improvement of paralysis and disability; however, not much is known about the relationship between paralysis recovery and the participation of plasticity-related molecules. Hence, the localization and level of expression of several proteins in the cerebral cortex of rat groups with/without voluntary exercise using a running wheel after photo thrombotic infarction were examined in this study. In behavioral evaluation, the mean latency until falling from a rotating rod in the group with voluntary exercise at 6 days after infarction was significantly longer than that in the group without exercise. Immunohistochemical localization of c-Fos protein after behavioral test occurred in the area surrounding the infarction core in the exercise group. In protein expression analysis, protein kinase C (PKC), growth-associated protein 43 (GAP43) and phosphorylated at serine 41 GAP43 (p-GAP43) were significantly increased after voluntary exercise compared with those in rats without exercise. Expression of PKC immunoreactivity was observed in layer III of the perilesional cortex in rats with exercise, and the intracellular localization in the pyramidal neurons was mainly translocated to the plasma membrane. The expression and localization of these proteins may be related to the underlying mechanisms of exercise-induced paralysis recovery, that is, neuronal plasticity and remodeling of cortical connections through the phosphorylation of GAP43 by interaction with PKC. In the present study, the participation of at least some of the modulators associated with the improvement of motor deficit adjacent to the brain lesion might have been detected.

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18. Rev Neurol. 2013 Jul 1;57(1):3-8.**Prenatal cerebrovascular accidents diagnosed in the early infant stage: a series of 10 patients [Article in Spanish]**

Pina-Jover M, Martinez-Del Villar M, Lillo-Laguna L, Jadraque-Rodriguez R, Martinez-Pastor P, Jover-Cerda J, Gomez-Gosalvez F.

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INTRODUCTION. A foetal or prenatal cerebrovascular accident (CVA) is defined as an ischaemic, thrombotic or arterial or venous haemorrhagic event that occurs between the 14th week of gestation and the onset of labour. **PATIENTS AND METHODS.** We report a retrospective study of a series of 10 patients suffering from a, presumably foetal, stroke that went unnoticed during the pregnancy and was diagnosed in the early infant stage. The symptoms and the age at which they were identified are highlighted. **RESULTS.** None of the 10 patients studied presented any relevant events in the mothers' medical history, but there were four threats of a preterm birth that were solved using the usual means and without the occurrence of any alterations that later affected the foetus. The studies that led to the diagnosis were carried out between the sixth and ninth months of life, and the reason for visiting was reported by the family as being a lower degree of mobility on one side of the body with respect to the other. Two patients presented thrombophilia. With a mean follow-up time of six years, all the patients have an associated infantile cerebral palsy, a third of them have epilepsy and 75% have learning difficulties or intellectual disability. **CONCLUSIONS.** When CVA are not detected in the prenatal period, it is important in primary care to look for and detect the warning signs of the psychomotor development of the infant at an early stage in order to begin a study of the case and to undertake rehabilitation as early as possible.

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