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Sujet de recherche :
PHYSIOTHÉRAPIE PÉDIATRIQUE – DONNÉES PROBANTES
(Recherche non exhaustive)

Période couverte : *5 dernières années*

Recherche effectuée par : *Jessie St-Laurent*

Recherche effectuée dans : *PubMed*

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Articles

1. **Arch Phys Med Rehabil. 2018 Jan;99(1):178-193.e1. doi: 10.1016/j.apmr.2017.05.030. Epub 2017 Jul 18.**

Exercise Therapy in Juvenile Idiopathic Arthritis: A Systematic Review and Meta-Analysis.

Kuntze G(1), Nesbitt C(2), Whittaker JL(3), Nettel-Aguirre A(4), Toomey C(2), Esau S(2), Doyle-Baker PK(2), Shank J(2), Brooks J(4), Benseler S(4), Emery CA(2).

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OBJECTIVE: To conduct a systematic review to evaluate the efficacy of exercise interventions in improving outcomes across domains of functioning and disability in children and adolescents with juvenile idiopathic arthritis (JIA). DATA SOURCES: Seven electronic databases were systematically searched up to November 16, 2016. STUDY SELECTION: Original data, analytic prospective design, physical therapy-led exercise intervention evaluation, children and adolescents with JIA, and assessment of functional, structural, activity, participation, or quality of life outcomes. DATA EXTRACTION: Two authors screened search results, and discrepancies were resolved by consensus. Of 5037 potentially relevant studies, 9 randomized controlled trials and 1 cohort study were included and scored. DATA SYNTHESIS: Study quality (Downs and Black quality assessment tool) and level of evidence (Oxford Centre of Evidence-Based Medicine model) were assessed and meta-analysis conducted where appropriate. Alternatively, a descriptive summary approach was chosen. All randomized controlled trials were moderate-quality intervention studies (level 2b evidence; median Downs and Black score, 20 out of 32; range, 15-27). Interventions included aquatic, strengthening, proprioceptive, aerobic, and Pilates exercises. Pediatric activity capacity (Child Health Assessment Questionnaire) improved with exercise (mean difference, .45; 95% confidence interval, .05-.76). Furthermore, descriptive summaries indicated improved activity capacity, body function and structure (pain and muscle strength), and quality of life outcomes. CONCLUSIONS: Exercise therapy appears to be well tolerated and beneficial across clinically relevant outcomes in patients with JIA. The paucity of high-quality evidence and study heterogeneity limited the ability to provide conclusive, generalizing evidence for the efficacy of exercise therapy and to provide specific recommendations for clinical practice at this time. Future research evaluating exercise program implementation using validated outcomes and detailed adherence and safety assessment is needed to optimize clinical decision pathways in patients with JIA.

DOI: 10.1016/j.apmr.2017.05.030 PMID: 28729171 [Indexed for MEDLINE]

2. BMC Pediatr. 2016 Nov 29;16(1):193.

Interventions to improve gross motor performance in children with neurodevelopmental disorders: a meta-analysis.

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BACKGROUND: Gross motor skills are fundamental to childhood development. The effectiveness of current physical therapy options for children with mild to moderate gross motor disorders is unknown. The aim of this study was to systematically review the literature to investigate the effectiveness of conservative interventions to improve gross motor performance in children with a range of neurodevelopmental disorders. METHODS: A systematic review with meta-analysis was conducted. MEDLINE, EMBASE, AMED, CINAHL, PsycINFO, PEDro, Cochrane Collaboration, Google Scholar databases and clinical trial registries were searched. Published randomised controlled trials including children 3 to ≤18 years with (i) Developmental Coordination Disorder (DCD) or Cerebral Palsy (CP) (Gross Motor Function Classification System Level 1) or Developmental Delay or Minimal Acquired Brain Injury or Prematurity (<30 weeks gestational age) or Fetal Alcohol Spectrum Disorders; and (ii) receiving non-pharmacological or non-surgical interventions from a health professional and (iii) gross motor outcomes obtained using a standardised assessment tool. Meta-analysis was performed to determine the pooled effect of intervention on gross motor function. Methodological quality and strength of meta-analysis recommendations were evaluated using PEDro and the GRADE approach respectively. RESULTS: Of 2513 papers, 9 met inclusion criteria including children with CP (n = 2) or DCD (n = 7) receiving 11 different interventions. Only two of 9 trials showed an effect for treatment. Using the least conservative trial outcomes a large beneficial effect of intervention was shown (SMD:-0.8; 95% CI:-1.1 to -0.5) with "very low quality" GRADE ratings. Using the most conservative trial outcomes there is no treatment effect (SMD:-0.1; 95% CI:-0.3 to 0.2) with "low quality" GRADE ratings. Study limitations included the small number and poor quality of the available trials. CONCLUSION: Although we found that some interventions with a task-orientated framework can improve gross motor outcomes in children with DCD or CP, these findings are limited by the very low quality of the available evidence. High quality intervention trials are urgently needed.

DOI: 10.1186/s12887-016-0731-6 PMCID: PMC5129231

PMID: 27899082 [Indexed for MEDLINE]

3. Phys Ther. 2016 Dec;96(12):1938-1954. Epub 2016 Jun 16.

Effectiveness of Rehabilitation Interventions to Improve Gait Speed in Children With Cerebral Palsy: Systematic Review and Meta-analysis.

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BACKGROUND: Children with cerebral palsy (CP) have decreased gait speeds, which can negatively affect their community participation and quality of life. However, evidence for effective rehabilitation interventions to improve gait speed remains unclear. PURPOSE: The purpose of this study was to determine the effectiveness of interventions for improving gait speed in ambulatory children with CP. DATA SOURCES: MEDLINE/PubMed,

CINAHL, ERIC, and PEDro were searched from inception through April 2014. STUDY SELECTION: The selected studies were randomized controlled trials or had experimental designs with a comparison group, included a physical therapy or rehabilitation intervention for children with CP, and reported gait speed as an outcome measure. DATA EXTRACTION: Methodological quality was assessed by PEDro scores. Means, standard deviations, and change scores for gait speed were extracted. General study information and dosing parameters (frequency, duration, intensity, and volume) of the intervention were recorded. DATA SYNTHESIS: Twenty-four studies were included. Three categories of interventions were identified: gait training (n=8), resistance training (n=9), and miscellaneous (n=7). Meta-analysis showed that gait training was effective in increasing gait speed, with a standardized effect size of 0.92 (95% confidence interval=0.19, 1.66; P=.01), whereas resistance training was shown to have a negligible effect (effect size=0.06; 95% confidence interval=-0.12, 0.25; P=.51). Effect sizes from negative to large were reported for studies in the miscellaneous category. LIMITATIONS: Gait speed was the only outcome measure analyzed. CONCLUSIONS: Gait training was the most effective intervention in improving gait speed for ambulatory children with CP. Strength training, even if properly dosed, was not shown to be effective in improving gait speed. Velocity training, electromyographic biofeedback training, and whole-body vibration were effective in improving gait speed in individual studies and warrant further investigation.

DOI: 10.2522/ptj.20150401

PMCID: PMC5131187 PMID: 27313240 [Indexed for MEDLINE]

4. Pediatr Rheumatol Online J. 2016 Apr 29;14(1):29. doi: 10.1186/s12969-016-0090-8.

Pediatric complex regional pain syndrome: a review.

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Complex regional pain syndrome (CRPS) is a chronic, intensified localized pain condition that can affect children and adolescents as well as adults, but is more common among adolescent girls. Symptoms include limb pain; allodynia; hyperalgesia; swelling and/or changes in skin color of the affected limb; dry, mottled skin; hyperhidrosis and trophic changes of the nails and hair. The exact mechanism of CRPS is unknown, although several different mechanisms have been suggested. The diagnosis is clinical, with the aid of the adult criteria for CRPS. Standard care consists of a multidisciplinary approach with the implementation of intensive physical therapy in conjunction with psychological counseling. Pharmacological treatments may aid in reducing pain in order to allow the patient to participate fully in intensive physiotherapy. The prognosis in pediatric CRPS is favorable.

DOI: 10.1186/s12969-016-0090-8

PMCID: PMC4850724 PMID: 27130211 [Indexed for MEDLINE]

5. Pediatrics. 2016 Mar;137(3):e20151230. doi: 10.1542/peds.2015-1230. Epub 2016 Feb 17.

Pediatric Pes Planus: A State-of-the-Art Review.

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Flatfoot (pes planus) is common in infants and children and often resolves by adolescence. Thus, flatfoot is described as physiologic because it is usually flexible, painless, and of no functional consequence. In rare instances, flatfoot can become painful or rigid, which may be a sign of underlying foot pathology, including arthritis or tarsal coalition. Despite its prevalence, there is no standard definition for pediatric flatfoot. Furthermore, there are no large, prospective studies that compare the natural history of idiopathic, flexible flat feet throughout development in response to various treatments. The available literature does not elucidate which patients are at risk for developing pain and disability as young adults. Current evidence suggests that it is safe and appropriate to simply observe an asymptomatic child with flat feet. Painful flexible flatfoot may benefit from orthopedic intervention, such as physical therapy, bracing, or even a surgical procedure. Orthotics, although generally unproven to alter the course of flexible flatfoot, may provide relief of pain when present. Surgical procedures include Achilles tendon lengthening, bone-cutting procedures that rearrange the alignment of the foot (osteotomies), fusion of joints (arthrodesis), or insertion of a silicone or metal cap into the sinus tarsi to establish a medial foot arch (arthroereisis). It is important for a general pediatrician to know when a referral to an orthopedic specialist is indicated and which treatments may be offered to the patient. Updated awareness of the current evidence regarding pediatric flatfoot helps the provider confidently and appropriately counsel patients and families.

DOI: 10.1542/peds.2015-1230

PMID: 26908688 [Indexed for MEDLINE]

6. BMJ Open. 2015 Dec 7;5(12):e010212. doi: 10.1136/bmjopen-2015-010212.

Early childhood constraint therapy for sensory/motor impairment in cerebral palsy: a randomised clinical trial protocol.

Chorna O(1), Heathcock J(2), Key A(3), Noritz G(4), Carey H(1), Hamm E(1), Nelin MA(1), Murray M(5), Needham A(6), Slaughter JC(7), Maitre NL(8).

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INTRODUCTION: Cerebral palsy (CP) is the most common physical disability in childhood. It is a disorder resulting from sensory and motor impairments due to perinatal brain injury, with lifetime consequences that range from poor adaptive and social function to communication and emotional disturbances. Infants with CP have a fundamental disadvantage in recovering motor function: they do not receive accurate sensory feedback from their movements, leading to developmental disregard. Constraint-induced movement therapy (CIMT) is one of the few effective neurorehabilitative strategies shown to improve upper extremity motor function in adults and older children with CP, potentially overcoming developmental disregard. METHODS AND ANALYSIS: This study is a randomised controlled trial of children 12-24 months corrected age studying the effectiveness of

CIMT combined with motor and sensory-motor interventions. The study population will comprise 72 children with CP and 144 typically developing children for a total of N=216 children. All children with CP, regardless of group allocation will continue with their standard of care occupational and physical therapy throughout the study. The research material collected will be in the form of data from high-density array event-related potential scan, standardised assessment scores and motion analysis scores. ETHICS AND DISSEMINATION: The study protocol was approved by the Institutional Review Board. The findings of the trial will be disseminated through peer-reviewed journals and scientific conferences. TRIAL REGISTRATION NUMBER: NCT02567630. Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to http://www.bmj.com/company/products-services/rights-and-licensing/

DOI: 10.1136/bmjopen-2015-010212

PMCID: PMC4679990 PMID: 26644127 [Indexed for MEDLINE]

7. Phys Occup Ther Pediatr. 2015 May;35(2):195-210. doi: 10.3109/01942638.2015.1012318. Epub 2015 Mar 19.

Knowledge to practice in developmental coordination disorder: impact of an evidence-based online module on physical therapists' self-reported knowledge, skills, and practice.

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AIMS: To evaluate the impact of an evidence-based online module on Developmental Coordination Disorder (DCD) on self-reported physical therapist (PT) knowledge, skills, and practice. METHODS: Fifty PTs completed a questionnaire before and after the completion of the online module, with 41 PTs completing the same questionnaire 2 months later. The questionnaires included items rated using a 7-point Likert Scale and short open-ended questions. RESULTS: There was a significant effect of Time for 17 out of 18 items on self-reported knowledge, and all 19 items for self-reported skills. Post-hoc analyses indicated that mean scores at Time 2 and Time 3 were higher than the mean scores at Time 1. Forty-six (92%) participants reported an increase in their confidence to provide evidence-based services. Forty-three (86%) participants indicated their intentions to modify their evaluative practices (e.g., involving children in goal setting) and their management of DCD (e.g., using the best practice principles, providing resources to families). At the 2-month follow-up, 19 (46%) participants had returned to the module to review information (e.g., video, resources) or to download handouts. CONCLUSIONS: The online DCD module appears to be an effective knowledge translation strategy to increase PTs' self-reported knowledge and skills, and to support evidence-informed practice.

DOI: 10.3109/01942638.2015.1012318

PMID: 25790193 [Indexed for MEDLINE]

8. Pediatr Phys Ther. 2014 Spring;26(1):38-47. doi: 10.1097/PEP.0000000000000011.

Efficacy of orthoses for children with hypotonia: a systematic review.

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PURPOSE: The purpose of this systematic review of the literature was to determine the efficacy of orthoses for children with hypotonia and provide a concise summary of the state of the evidence in this area. METHODS:

Fifteen search terms were used to find articles addressing children with hypotonia, orthotic use, and physical therapy. RESULTS: Ten articles met the inclusion criteria, but no level I evidence was found. Data were reported for body structure and activity components, but not participation outcomes. Current evidence suggests that foot orthoses and supramalleolar orthoses may benefit children with hypotonia; however, the evidence is low level. CONCLUSION: The evidence for efficacy of orthoses for children with hypotonia continues to have gaps with the following questions still unanswered: When is the optimal time to introduce orthoses? Are foot orthoses or supramalleolar orthoses more efficacious? Should orthoses be combined with physical therapy?

DOI: 10.1097/PEP.0000000000000011

PMID: 24356317 [Indexed for MEDLINE]

9. Pol Orthop Traumatol. 2013 Dec 18;78:265-71.

Algodystrophy in children and adolescents: a review.

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Algodystrophy occurs in children significantly less frequently than in adults. Symptomatology, course, responsiveness to treatment and prognosis of the pediatric disease is also different from the "adult" form. This paper presents substantial peculiarities of pediatric algodystrophy: it occurs after relatively minor trauma, involves lower limb more frequently than upper limb and presents with pain, paleness and coldness of the skin in the affected part, as well as with serious functional impairment. Diagnosis of the condition is based on clinical grounds and no imaging is necessary to confirm the diagnosis. Psychological distress is suspected in the development of the disease in children and adolescents, but there is no definitive evidence supporting this view. Treatment of pediatric algodystrophy should be complex and consist of physical therapy, psychotherapy, pain therapy and, in selected cases, sympathetic and somatic blocks. The literature emphasizes very poor knowledge of algodystrophy in the pediatric community.

PMID: 24351874 [Indexed for MEDLINE]

10. Child Care Health Dev. 2014 Nov;40(6):787-96. doi: 10.1111/cch.12097. Epub 2013 Aug 13.

Parents' experiences with physical and occupational therapy for their young child with cerebral palsy: a mixed studies review.

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Understanding the experiences of parents with their child's intervention might help meet the needs of parents and, subsequently get them engaged in their child's intervention. As parents' early beliefs regarding their child's intervention has consequences for treatment participation, it is important to understand these parental perspectives. The aim of this mixed studies review was to give an overview of the experiences and related factors of parents of young children (0-5 years of age) with cerebral palsy in relation to the physical and/or occupational therapy of their child in a rehabilitation setting. The literature was searched systematically for

qualitative and quantitative studies published between January 1990 and July 2011. Inclusion criteria were (1) the study population consisted of parents of children with cerebral palsy, with at least 25% of children under the age of five; (2) children had received physical and/or occupational therapy in a rehabilitation setting; and (3) the experiences of the parents with their child's therapy were addressed. Data were synthesized with the framework synthesis method resulting in a conceptual framework describing the factors that are related to the parents' experiences with their child's interventions. A total of 13 studies (eight qualitative and five quantitative) were included and evaluated. Parents expressed various aspects in context, process and outcomes when asked about their experiences with their child's intervention. They had different needs over time and needed time to build a collaborative relationship with their child's therapists. The proposed framework acknowledges the various aspects in context, process and outcomes that parents reported when asked about their experiences. Knowing this, the importance of the broader context of the child in a family should be acknowledged; realizing the impact that the demands of daily life, supports and resources provided to parents, attitudes in the community and culture have on parental experiences.

DOI: 10.1111/cch.12097

PMID: 23937711 [Indexed for MEDLINE]

11. Child Care Health Dev. 2014 Mar;40(2):275-82. doi: 10.1111/cch.12026. Epub 2013 Jan 30.

Rehabilitation service utilization in children and youth with cerebral palsy.

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AIM: To describe the pattern of use of rehabilitation services in children and adolescents with cerebral palsy (CP), and to identify factors associated with use. METHODS: In this study, parents of 91 school-age children and 167 adolescents with CP completed a questionnaire regarding educational and rehabilitation resources received within the last 6 months. Rehabilitation services included occupational therapy (OT), physical therapy (PT), speech language pathology (SLP), psychology and special education. Demographic characteristics were documented and developmental and functional status was assessed. Relationships between service utilization and sociodemographic factors, functioning and school setting were determined. RESULTS: Over half of children (53.2%) and adolescents (57.5%) were in regular schools; however, 41% of these required special education resources. The remainder (42.5-46.8%) was in special schools. The majority of children (84.6%) were receiving at least one rehabilitation service although this decreased (68.1%) in adolescence. PT and OT were most common and services were provided predominantly in the school setting. Services were primarily weekly direct interventions at school age, with weekly interventions or consultations most common for adolescents. Younger age was associated with service receipt at school age only. Children with greater motor limitations, lower IQ and greater activity limitations were more likely to receive OT, PT, SLP or special education. Children in segregated schools were significantly more likely to receive rehabilitation services, when compared with children in regular schools. CONCLUSIONS: The majority of children and youth received one or more services. Individuals with greater motor or cognitive challenges were more likely to receive a range of school-based services from rehabilitation specialists. When compared with children of school age, adolescents were less likely to receive services and when provided, services were more likely to be consultative. Services may need to be more optimally organized through childhood to enhance benefits to children with CP across activity limitation profiles.

DOI: 10.1111/cch.12026

PMID: 23363242 [Indexed for MEDLINE]

12. Health Technol Assess. 2017 May;21(27):1-120. doi: 10.3310/hta21270.

Aquatic therapy for children with Duchenne muscular dystrophy: a pilot feasibility randomised controlled trial and mixed-methods process evaluation.

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BACKGROUND: Duchenne muscular dystrophy (DMD) is a rare disease that causes the progressive loss of motor abilities such as walking. Standard treatment includes physiotherapy. No trial has evaluated whether or not adding aquatic therapy (AT) to land-based therapy (LBT) exercises helps to keep muscles strong and children independent. OBJECTIVES: To assess the feasibility of recruiting boys with DMD to a randomised trial evaluating AT (primary objective) and to collect data from them; to assess how, and how well, the intervention and trial procedures work. DESIGN: Parallel-group, single-blind, randomised pilot trial with nested qualitative research. SETTING: Six paediatric neuromuscular units. PARTICIPANTS: Children with DMD aged 7-16 years, established on corticosteroids, with a North Star Ambulatory Assessment (NSAA) score of 8-34 and able to complete a 10-m walk without aids/assistance. Exclusions: > 20% variation between baseline screens 4 weeks apart and contraindications. INTERVENTIONS: Participants were allocated on a 1 : 1 ratio to (1) optimised, manualised LBT (prescribed by specialist neuromuscular physiotherapists) or (2) the same plus manualised AT (30 minutes, twice weekly for 6 months: active assisted and/or passive stretching regime; simulated or real functional activities; submaximal exercise). Semistructured interviews with participants, parents (n = 8) and professionals (n = 8) were analysed using Framework analysis. An independent rater reviewed patient records to determine the extent to which treatment was optimised. A cost-impact analysis was performed. Quantitative and qualitative data were mixed using a triangulation exercise. MAIN OUTCOME MEASURES: Feasibility of recruiting 40 participants in 6 months, participant and therapist views on the acceptability of the intervention and research protocols, clinical outcomes including NSAA, independent assessment of treatment optimisation and intervention costs. RESULTS: Over 6 months, 348 children were screened - most lived too far from centres or were enrolled in other trials. Twelve (30% of target) were randomised to AT (n = 8) or control (n = 4). People in the AT (n = 8) and control (n = 2: attrition because of parental report) arms contributed outcome data. The mean change in NSAA score at 6 months was -5.5 [standard deviation (SD) 7.8] for LBT and -2.8 (SD 4.1) in the AT arm. One boy suffered pain and fatigue after AT, which resolved the same day. Physiotherapists and parents valued AT and believed that it should be delivered in community settings. The independent rater considered AT optimised for three out of eight children, with other children given programmes that were too extensive and insufficiently focused. The estimated NHS costs of 6-month service were between £1970 and £2734 per patient. LIMITATIONS: The focus

on delivery in hospitals limits generalisability. CONCLUSIONS: Neither a full-scale frequentist randomised controlled trial (RCT) recruiting in the UK alone nor a twice-weekly open-ended AT course delivered at tertiary centres is feasible. Further intervention development research is needed to identify how community-based pools can be accessed, and how families can link with each other and community physiotherapists to access tailored AT programmes guided by highly specialised physiotherapists. Bayesian RCTs may be feasible; otherwise, time series designs are recommended. TRIAL REGISTRATION: Current Controlled Trials ISRCTN41002956. FUNDING: This project was funded by the National Institute for Health Research (NIHR) Health Technology Assessment programme and will be published in full in Health Technology Assessment; Vol. 21, No. 27. See the NIHR Journals Library website for further project information.

DOI: 10.3310/hta21270 PMCID: PMC5494511

PMID: 28627356 [Indexed for MEDLINE]

13. J Dev Behav Pediatr. 2017 Jan;38(1):67-78. doi: 10.1097/DBP.0000000000000376.

Plagiocephaly and Developmental Delay: A Systematic Review.

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OBJECTIVE: Deformational plagiocephaly (includes plagiocephaly and brachycephaly) is a common pediatric condition. Infants who present with altered head shape often experience developmental delay. It is uncertain how common developmental delay is in infants with plagiocephaly and how sustained this is, when present. This review explores the association between plagiocephaly and developmental delay to guide clinical practice. STUDY DESIGN: A systematic review was conducted. MEDLINE, EMBASE, CINAHL, and PEDro databases were searched. Data from relevant studies were extracted regarding study: sample, follow-up, design, and findings. Methodological quality of each study was rated using a critical appraisal tool. RESULTS: The search recovered 1315 articles of which 19 met the inclusion criteria. In the included studies, the children's ages ranged from 3 months to 10 years. Study limitations included selection bias, nonblinding of assessors, and reuse of the same study population for multiple papers. Most papers (11/19) rated "moderate" on methodological quality. A positive association between plagiocephaly and developmental delay was reported in 13 of 19 studies, including 4 of 5 studies with "strong" methodological quality. Delay was more frequently in studies with children ≤24 months of age (9/12 studies) compared with >24 months of age (3/7 studies). Motor delay was the most commonly affected domain reported in high-quality papers (5/5 studies). CONCLUSION: This review suggests plagiocephaly is a marker of elevated risk of developmental delays. Clinicians should closely monitor infants with plagiocephaly for this. Prompt referral to early intervention services such as physiotherapy may ameliorate motor delays and identify infants with longer term developmental needs.

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14. Clin Rehabil. 2017 Jul;31(7):857-870. doi: 10.1177/0269215516661014. Epub 2016 Aug 1.

A systematic review of high quality randomized controlled trials investigating motor skill programmes for children with developmental coordination disorder.

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OBJECTIVE: To identify effective motor training interventions for children with developmental coordination disorder from research graded as high quality (using objective criteria) for the purpose of informing evidence-based clinical practice. DATA SOURCES: We followed the guidance for conducting systematic reviews issued by the Centre for Reviews and Dissemination. Six OvidSP electronic databases (AMED, All EBM reviews (including Cochrane), Embase, Ovid MEDLINE, PsychARTICLES Full Text, PsycINFO) were searched systematically. We aimed to retain only randomized control trials and systematic reviews of randomized control trials, defined as the highest level of evidence by the Oxford Centre for Evidence-Based Medicine. We searched reference lists of retained articles to identify further appropriate articles. REVIEW METHODS: Two reviewers critically appraised and categorized articles by effect size (including confidence intervals), inclusion of power calculations and quality using the Physiotherapy Evidence Database (PEDro) scale. Only studies scoring seven or more on the PEDro scale (classed by the PEDro as high reliability) were retained. RESULTS: No systematic reviews met our criteria for inclusion from 846 articles yielded by the systematic search. Nine randomized control trials investigating 15 interventions to improve motor skills met our inclusion criteria for 'high quality'. Nevertheless, not all included studies were adequately powered for determining an effect. CONCLUSION: Large effect sizes associated with 95 % confidence intervals suggest that 'Neuromotor Task Training', 'Task-oriented Motor Training' and 'Motor Imagery + Task Practice Training' are the most effective reported interventions for improving motor skills in children with developmental coordination disorder.

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PMCID: PMC5482383 PMID: 27481937 [Indexed for MEDLINE]

15. Brain Inj. 2016;30(8):948-59. doi: 10.3109/02699052.2016.1147079. Epub 2016 Apr 27.

Systematic review of physiotherapy interventions to improve gross motor capacity and performance in children and adolescents with an acquired brain injury.

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AIM: To systematically review the efficacy of physiotherapy interventions to improve gross motor capacity, performance and societal participation in children aged 5-17 years with an acquired brain injury (ABI). METHODS: Randomized and non-randomized controlled trials, cohort, case series, case-control and case studies were included and classified according to grades of evidence. Methodological quality of studies was assessed using the Downs and Black (D&B) scale and quantitative data was analysed using effect sizes. RESULTS: Two home-based studies investigated functional strength training (one randomized controlled trial, n = 20, level 2b, D&B = 16/32 and one non-randomized self-control study, n = 19, level 4, D&B = 15/32). Four studies evaluated virtual reality including: one pilot study, n = 50, level 4, D&B = 22/32; one single-subject, non-concurrent, randomized multiple baseline study, n = 3, level 4, D&B = 15/32; one case series study, n = 2, level 4, D&B = 15/32; one case study, n = 1, level 4, D&B = 15/32. Effect sizes for the randomized controlled trial ranged

between 0.30-1.29 for the Functional Reach and Timed Up and Go outcome measures. CONCLUSION: There is preliminary evidence to support the efficacy of physiotherapy interventions to improve gross motor outcomes in children with an ABI. Both functional strength training and virtual-reality based therapy are potential treatment options for clinicians to prescribe in either home or clinical settings.

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PMID: 27119733 [Indexed for MEDLINE]

16. Dev Med Child Neurol. 2016 Apr;58(4):348-60. doi: 10.1111/dmcn.12988. Epub 2015 Nov 27.

Efficacy of suit therapy on functioning in children and adolescents with cerebral palsy: a systematic review and meta-analysis.

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AIM: This systematic review and meta-analysis presents an overview of the efficacy of suit therapy on functioning in children and adolescents with cerebral palsy (CP). METHOD: A systematic review with meta-analysis was conducted. A comprehensive search of peer-reviewed articles was performed on electronic databases, from their inception to May 2014. Studies included were rated for methodological quality using the Physiotherapy Evidence Database scale. Effects of suit therapy on functioning were assessed using meta-analytic techniques. RESULTS: From the 46 identified studies, four met the inclusion criteria and were included in the meta-analysis. Small, pooled effect sizes were found for gross motor function at post-treatment (g=0.46, 95% confidence interval [CI] 0.10-0.82) and follow-up (g=0.47, 95% CI 0.03-0.90). INTERPRETATION: The small number of studies, the variability between them, and the low sample sizes are limitations of this review. Findings suggest that to weigh and balance benefits against harms, clinicians, patients, and families need better evidence to examine and prove the effects of short intensive treatment such as suit therapy on gross motor function in children and adolescents with CP. Therefore, more research based on high-quality studies focusing on functioning in all dimensions of the International Classification of Functioning, Disability and Health perspective is necessary to clarify the impact of suit therapy.

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PMID: 26613800 [Indexed for MEDLINE]

17. Clin Rehabil. 2014 Oct;28(10):939-53. doi: 10.1177/0269215514544982. Epub 2014 Aug 14.

Effectiveness of constraint-induced movement therapy on upper-extremity function in children with cerebral palsy: a systematic review and meta-analysis of randomized controlled trials.

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OBJECTIVE: To systematically examine the research literature on the effectiveness of constraint-induced movement therapy on improving arm function in children with cerebral palsy, and to assess the association between the study effect size and the characteristics of the patients and intervention protocol. DATA SOURCES: A systematic literature search was conducted in PubMed, PsycINFO, Cochrane, CINAHL, Web of Science, and TRIP Database up to May 2014. REVIEW METHODS: Studies employing randomized controlled trial design, children with cerebral palsy, comparing constraint-induced movement therapy with another intervention with a focus on arm function, and upper-extremity measures were included in this review. Methodological quality was evaluated using the Physiotherapy Evidence-based Database (PEDro) scale. RESULTS: The literature search resulted in 27 randomized controlled trial studies with good methodological quality that compared constraint-induced movement therapy with other intervention therapy. Overall, constraint-induced movement therapy provided a medium beneficial effect ($d = 0.546$; $p < 0.001$) when compared with conventional therapy. For the subgroup analyses, presence of a dose-equivalent comparison group, intervention location, and time of follow-up were significant factors. Studies examining constraint-induced movement therapy effect without a dose-equivalent comparison group showed a large effect in children with cerebral palsy, but studies with a dose-equivalent group only showed a small effect. Children who received home-based constraint-induced movement therapy had a better improvement in arm function than those who received constraint-induced movement therapy elsewhere. CONCLUSION: The research literature supports constraint-induced movement therapy as an effective intervention to improve arm function in children with cerebral palsy. © The Author(s) 2014.

DOI: 10.1177/0269215514544982

PMID: 25125440 [Indexed for MEDLINE]

18. J Paediatr Child Health. 2015 Feb;51(2):159-67. doi: 10.1111/jpc.12630. Epub 2014 Jun 13.

Is physiotherapy effective in the management of child and adolescent conversion disorder? A systematic review.

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Child and adolescent conversion disorder has the potential to impart significant burden on health-care services and affect quality of life. Clinically, physiotherapists are involved in conversion disorder management; however, no systematic reviews have examined physiotherapy effectiveness in its management. The aim of this review is to identify the efficacy of physiotherapy management of child and adolescent conversion disorder. A search of multiple databases (Medline, CINAHL, Embase, PsychINFO, PEDro and the Cochrane Library) was completed along with manual searching of relevant reference lists to identify articles including children 0-18 years with a diagnosis of conversion disorder who received physical management. Two independent reviewers screened titles and abstracts using criteria. Data were extracted regarding study characteristics, functional outcome measures, length of stay, physiotherapy service duration and resolution of conversion symptoms. Methodological quality was assessed using a tool designed for observational studies. Twelve observational studies were included. No functional outcome measures were used to assess the effectiveness of the treatment protocols in the case studies. Resolution of symptoms occurred in all but two cases, with conversion symptoms still present at 11 months and at 2 years. Length of stay varied from 3 days to 16 weeks, with similar variation evident in length of physiotherapy service provision (2.5 weeks to 16 weeks). There was limited and poor quality evidence to establish the efficacy of physiotherapy management of child and adolescent conversion disorders. More rigorous study designs with consistent use of reliable, valid and sensitive functional outcome measures are needed in this area. © 2014 The Authors. Journal of Paediatrics and Child Health © 2014 Paediatrics and Child Health Division (Royal Australasian College of Physicians).

DOI: 10.1111/jpc.12630

PMID: 24923418 [Indexed for MEDLINE]

19. Res Dev Disabil. 2014 Feb;35(2):239-49. doi: 10.1016/j.ridd.2013.10.021. Epub 2013 Nov 27.

Meta-analysis of the effect of strengthening interventions in individuals with cerebral palsy.

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This study aimed to investigate the evidence that strengthening interventions can improve muscle strength and activity in individuals with cerebral palsy. The search focused on studies that employed strength training for children with cerebral palsy for which six electronic databases were used to extract literature published from 2001 to 2012. The key terms used in these searches were combined strength training, strengthening, weight training, weight lifting, resistance, and cerebral palsy. The quality of each study was assessed using the PEDro (Physiotherapy Evidence Database) scale. Thirteen randomized controlled trial studies were selected and divided into categories according to program type, mode, and outcome measures. The overall effect sizes of each study and types of strengthening were large. Strengthening exercise improved muscle strength to a greater degree, when practiced 3 times per week in 40-50 min sessions than in other categories of session length, and greater improvement was observed in younger children than in older. The effect size of the activities and variables related to gait, except for gait endurance, were medium to large. The effect size of individual muscles was large, but the effect sizes for ankle plantar flexor, hip abductor/adductor, and extensor were insignificant. Strengthening interventions are useful for increasing muscle strength in individuals with cerebral palsy, specifically in youth and children, and optimal exercise consisted of 40- to 50-min sessions performed 3 times per week. Although strengthening interventions may improve activities, including gait, more studies that are rigorous are needed to determine the contributions to gross motor function.

DOI: 10.1016/j.ridd.2013.10.021

PMID: 24291625 [Indexed for MEDLINE]

20. Acta Paediatr. 2013 Aug;102(8):778-86. doi: 10.1111/apa.12270. Epub 2013 May 10.

Assessment and management of chronic orofacial pain associated with a disease in children: a multidisciplinary approach.

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To summarize the diversity of assessment and management for chronic orofacial pain associated with a disease (COFPAD) in children. We performed a review of the literature up to May 2012. Hetero-evaluation and self-assessment are used according to age of children. Strict management of the cause is not sufficient for children with COFPAD without a multidisciplinary approach combining pharmacotherapy, psychology and

physiotherapy.CONCLUSION: The multidisciplinary approach is the key of management for children with COFPAD. ©2013 Foundation Acta Paediatrica. Published by John Wiley & Sons Ltd.

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PMID: 23590184 [Indexed for MEDLINE]

21. Pediatr Phys Ther. 2017 Oct;29(4):342-349. doi: 10.1097/PEP.0000000000000446.

Interventions for Gait Training in Children With Spinal Cord Impairments: A Scoping Review.

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PURPOSE: This is a scoping review of the literature on interventions for gait in individuals with pediatric spinal cord impairments. SUMMARY OF KEY POINTS: Four categories of interventions were identified: orthoses/assistive devices, electrical stimulation, treadmill training, and infant treadmill stepping. CONCLUSIONS: Studies on orthotic intervention, electrical stimulation, and treadmill training reported benefits for various components of gait. The majority of articles (77%) were classified as levels of evidence III and IV. CLINICAL RECOMMENDATIONS: Each intervention targeted specific outcomes; therefore, it is important to identify individual patient characteristics and goals appropriate for each intervention to guide clinical practice. Determining the appropriate orthotic support for each child, and incorporating treadmill training or electrical stimulation, is recommended.

DOI: 10.1097/PEP.0000000000000446

PMID: 28953180 [Indexed for MEDLINE]

22. J Pediatr Rehabil Med. 2016 May 31;9(2):83-99. doi: 10.3233/PRM-160375.

Does therapeutic electrical stimulation improve function in children with disabilities? A comprehensive literature review.

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The use of therapeutic electrical stimulation for medical purposes is not new; it has been described in medical textbooks since the 18th century, but its use has been limited due to concerns for tolerance and lack of research showing efficacy. The purpose of this review is to discuss the potential clinical applicability, while clarifying the differences in electrical stimulation (ES) treatments and the theory behind potential benefits to remediate functional impairments in youth.The literature review was performed as follows: A total of 37 articles were reviewed and the evidence for use in pediatric diagnoses is reported.The synthesis of the literature suggests that improvements in various impairments may be possible with the integration of ES. Most studies were completed on children with cerebral palsy (CP). Electrical stimulation may improve muscle mass and strength, spasticity, passive range of motion (PROM), upper extremity function, walking speed, and positioning of the foot and ankle kinematics during walking. Sitting posture and static/dynamic sitting balance may be improved with ES to trunk musculature. Bone mineral density may be positively affected with the use of Functional Electrical Stimulation (FES) ergometry. ES may also be useful in the management of urinary tract dysfunction and chronic constipation.

Among all reviewed studies, reports of direct adverse reactions to electrical stimulation were rare.In conclusion, NMES and FES appear to be safe and well tolerated in children with various disabilities. It is suggested that physiatrists and other healthcare providers better understand the indications and parameters in order to utilize these tools effectively in the pediatric population. MeSH terms: Electrical stimulation; child; review.

DOI: 10.3233/PRM-160375

PMID: 27285801 [Indexed for MEDLINE]

23. Arch Pediatr. 2016 Jun;23(6):624-8. doi: 10.1016/j.arcped.2016.03.004. Epub 2016 Apr 23.

[Exercise therapy in the treatment of idiopathic adolescent scoliosis: Is it useful?]. [Article in French]

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Many practitioners, pediatricians, and general practitioners prescribe physical therapy when tracking scoliosis. However, has physical therapy alone proved its efficacy in the care of the scoliosis to slow down progression? Our purpose is to report the results of a literature review on the effectiveness of rehabilitation in idiopathic scoliosis. No current study presents sufficient scientific proof to validate the efficacy of isolated exercise therapy in scoliosis. Learned societies recognize, however, the efficacy of combining conservative therapy (brace+physiotherapy) in idiopathic scoliosis. Should we then still prescribe rehabilitation without brace treatment? Although physical therapy alone does not seem effective in treating scoliosis, it can limit potential painful phenomena and be beneficial for respiratory function. The physical therapist can also teach the teenager the classic principles of hygiene of the back. It may therefore be appropriate to prescribe physical therapy, but the principles and objectives must be explained to the patient and family in light of current evidence-based medicine.

DOI: 10.1016/j.arcped.2016.03.004

PMID: 27117993 [Indexed for MEDLINE]

24. J Burn Care Res. 2016 Nov/Dec;37(6):e539-e558.

Practice Guidelines for Cardiovascular Fitness and Strengthening Exercise Prescription After Burn Injury.

Nedelec B(1), Parry I, Acharya H, Benavides L, Bills S, Bucher JL, Cheal J, Chouinard A, Crump D, Duch S, Godleski M, Guenther J, Knox C, LaBonte E, Lorello D, Lucio JX, Macdonald LE, Kemp-Offenberg J, Osborne C, Pontius K, Yelvington M, de Oliveira A, Kloda LA.

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The objective of this review was to systematically evaluate the available clinical evidence for the prescription of strength training and cardiovascular endurance exercise programs for pediatric and adult burn survivors so that practice guidelines could be proposed. This review provides evidence-based recommendations specifically for rehabilitation professionals who are responsible for burn survivor rehabilitation. Summary recommendations were made after the literature was retrieved by systematic review, was critically appraised by multiple authors and the level of evidence determined in accordance with the Oxford Centre for Evidence-based Medicine criteria. Although gaps in the literature persist and should be addressed in future research projects, currently, strong research evidence supports the prescription of strength training and aerobic conditioning exercise programs for both adult and pediatric burn survivors when in the presence of strength limitations and/or decreased cardiovascular endurance after evaluation.

DOI: 10.1097/BCR.0000000000000282

PMID: 26284636 [Indexed for MEDLINE]

25. J Hand Ther. 2015 Apr-Jun;28(2):228-31; quiz 232. doi: 10.1016/j.jht.2014.05.003. Epub 2014 Jun 13.

Utilizing everyday items in play to facilitate hand therapy for pediatric patients.

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This article describes how hand therapy for pediatric patients can be enhanced through the use of play with everyday items. Playful activities integrate purposeful hand skills of pinch, grasp and manipulation, while encouraging the child to fully participate in therapy and home programs. By referring to Takata's developmental hierarchy of play, therapists can design the sessions to include novel, fun and age appropriate activities. The author offers eight sample activities for specific therapy goals utilizing inexpensive, everyday items.

DOI: 10.1016/j.jht.2014.05.003

PMID: 25060856 [Indexed for MEDLINE]

26. Phys Ther. 2014 Jun;94(6):875-89. doi: 10.2522/ptj.20130157. Epub 2014 Feb 13.

Current perspectives on physical activity and exercise recommendations for children and adolescents with autism spectrum disorders.

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Recent evidence suggests that childhood obesity is increasing in children who are developing typically as well as in children with developmental disabilities such as autism spectrum disorders (ASDs). Impairments specific to autism as well as general environmental factors could lead to an imbalance between the intake and expenditure of energy, leading to obesity. In this article, we describe the mechanisms by which autism-specific impairments contribute to obesity. The evidence on exercise interventions to improve physical fitness, address obesity, and reduce autism-specific impairments in children and adolescents with ASDs is discussed. Limited evidence is currently available for exercise interventions in individuals with ASDs. Therefore, literature on other pediatric developmental disabilities and children who are developing typically was reviewed to provide recommendations for clinicians to assess physical activity levels, to promote physical fitness, and to reduce obesity in children and adolescents with ASDs. There is a clear need for further systematic research to develop sensitive assessment tools and holistic multisystem and multifactorial obesity interventions that accommodate the social communication, motor, and behavioral impairments of individuals with ASDs.

DOI: 10.2522/ptj.20130157

PMCID: PMC4040426 PMID: 24525861 [Indexed for MEDLINE]

27. Arch Dis Child. 2015 Dec;100(12):1181-3. doi: 10.1136/archdischild-2015-309460.

Question 2: Do standing frames and other related physical therapies reduce the risk of fractures in children with cerebral palsy?

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DOI: 10.1136/archdischild-2015-309460

PMID: 26586521 [Indexed for MEDLINE]

28. Neurosurgery. 2016 Nov;79(5):E630-E631.

Guidelines: Congress of Neurological Surgeons Systematic Review and Evidence-Based Guideline for the Management of Patients With Positional Plagiocephaly: The Role of Physical Therapy.

Baird LC(1), Klimo P Jr, Flannery AM, Bauer DF, Beier A, Durham S, Lin AY, McClung-Smith C, Mitchell L, Nikas D, Tamber MS, Tyagi R, Mazzola C.

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BACKGROUND: Evidence-based guidelines are not currently available for the treatment of positional plagiocephaly and, in particular, for the use of physical therapy for treatment. OBJECTIVE: To answer the question: "does physical therapy provide effective treatment for positional plagiocephaly?" Treatment recommendations are created based on the available evidence. METHODS: The PubMed and the Cochrane Library were queried using MeSH headings and key words relevant to the objective of this systematic review. Abstracts were reviewed, after which studies meeting the inclusion criteria were selected and graded according to their quality of evidence (Classes I-III). Evidentiary tables were constructed that summarized pertinent study results, and recommendations were made based on the quality of the literature (Levels I-III). RESULTS: Three studies met criteria for inclusion. Two randomized, controlled trials (Class I and Class II) and 1 prospective study assessing plagiocephaly as a secondary outcome measure (Class III) were included. CONCLUSION: Within the limits of this systematic review, physical therapy is significantly more effective than repositioning education as a treatment for positional plagiocephaly. There is no significant difference between physical therapy and a positioning pillow as a treatment for positional plagiocephaly. However, given the American Academy of Pediatrics' recommendation against soft pillows in cribs to ensure a safe sleeping environment for infants, physical therapy must be recommended over the use of a positioning pillow. The full guidelines document can be located at https://www.cns.org/guidelines/guidelines-management-patients-positional-plagiocephaly/Chapter_4.

DOI: 10.1227/NEU.0000000000001429

PMID: 27759674 [Indexed for MEDLINE]

29. Muscle Nerve. 2017 Jan;55(1):16-22. doi: 10.1002/mus.25180. Epub 2016 Oct 24.

Maximal isometric muscle strength values obtained By hand-held dynamometry in children between 6 and 15 years of age.

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INTRODUCTION: In this study we aimed to determine the maximal isometric muscle strength of a healthy, normal-weight, pediatric population between 6 and 15 years of age using hand-held dynamometry to establish strength reference values. The secondary objective was determining the relationship between strength and anthropometric parameters. METHODS: Four hundred normal-weight Chilean children, split into 10 age groups, separated by 1-year intervals, were evaluated. Each age group included between 35 and 55 children. RESULTS: The strength values increased with increasing age and weight, with a correlation of 0.83 for age and 0.82 for weight. The results were similar to those reported in previous studies regarding the relationships among strength, age, and anthropometric parameters, but the reported strength differed. CONCLUSIONS: These results provide normal strength parameters for healthy and normal-weight Chilean children between 6 and 15 years of age and highlight the relevance of ethnicity in defining reference values for muscle strength in a pediatric population. Muscle Nerve 55: 16-22, 2017. © 2016 Wiley Periodicals, Inc.

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Hand-Held Dynamometry Isometric Torque Reference Values for Children and Adolescents.

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PURPOSE: To establish hand-held dynamometry (HHD) maximal isometric muscle torque (MIT) reference values for children and adolescents who are developing typically. METHODS: The MIT of 10 upper and lower limb muscle groups was assessed in 351 Caucasian youth (4 years 2 months to 17 years) using a standardized HHD protocol, previously shown to be feasible, valid, and reliable. RESULTS: The mean MIT and 95% confidence interval of the mean for all muscle groups, for each of the 14 age groups (1 year age span for each group), and for each sex, were reported in both absolute (Nm) and normalized (Nm/kg) values. CONCLUSION: These HHD reference values may be helpful in the identification of muscle strength impairments in several pediatric populations, especially when bilateral impairments are present.

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