Cerebral palsy research news

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Interventions and Management

1.Motor Planning in Children With Unilateral Cerebral Palsy: Effects of Task Context and Hand-Specific Interference

Kai-Jie Liang, Tong-Yu Chen, Chiao-Yu Yang, Hao-Ling Chen, Tien-Ni Wang

Am J Occup Ther. 2026 Mar 1;80(2):8002205020.

Importance: Motor planning refers to the ability to anticipate actions and predict motor outcomes before execution. Deficits in motor planning, rather than just execution, contribute to activity limitations in children with unilateral cerebral palsy (CP). However, the differences in motor planning between the two hands of children with unilateral CP in unimanual and bimanual conditions remain underexplored.
Objective: To investigate the differences in motor planning skills between the less affected and more affected hands of children with unilateral CP and both hands of age-matched typically developing (TD) children across unimanual, bimanual symmetric, asymmetric, and functional tasks.
Design: Cross-sectional study.
Setting: University laboratory.
Participants: Twenty children with unilateral CP and 20 age-matched TD children.
Outcomes and measures: Motor planning task performance was assessed using the end-state comfort (ESC) effect, measured by cup-bottle tasks.
Results: Children with unilateral CP demonstrated lower motor planning ability in their more affected hand compared with their less affected hand. Significant ESC differences were found across task conditions for children with CP, with the best performance observed in functional bimanual tasks. Additionally, the less affected hand demonstrated poorer motor planning in symmetrical tasks, possibly influenced by the performance of the more affected hand.
Conclusions and relevance: This study highlights differences in motor planning ability between the hands of children with unilateral CP, emphasizing the impact of task type and hand dominance. Functional bimanual tasks improved motor planning, underscoring their value in interventions. Future assessments and training should address both hands and incorporate functional tasks to enhance motor planning in children with unilateral CP.
PMID: 41609733

2.Short-term outcomes of guided growth of the proximal femur combined with soft-tissue release in children with cerebral palsy

Karim Abdallah, Ahmed O Sabry, Mohamed A Salama, Hassan Elbarbary, Mohamed Younes, Mohamed Hegazy

J Pediatr Orthop B. 2026 Mar 1;35(2):173–177. Epub 2026 Jan 27.

Abstract
Level IV.

PMID: 41603311

3.How Do Gait Outcomes Evolve in Adults with Spastic Cerebral Palsy Who Received Orthopedic Treatment in Childhood?

Anne Tabard-Fougère, Alice Bonnefoy-Mazure, Geraldo de Coulon, Oscar Vazquez, Stéphane Armand

Children (Basel). 2026 Jan 22;13(1):158.

Background/Objectives: While gait improvements are often seen in childhood among individuals with cerebral palsy (CP), it is unclear whether these gains persist into adulthood. This study evaluated long-term gait trajectories from childhood to adulthood among individuals who received early orthopedic care. Methods: This retrospective study included 83 adults with CP (44 unilateral, 39 bilateral; GMFCS I–III) who had childhood and adult gait analyses (249 total sessions). Gait outcomes included modified Gait Profile Score (mGPS) and normalized walking speed (NWS). Life-stage effects were analyzed using Kruskal-Wallis tests; individual changes between early adulthood and adulthood were assessed using MCID thresholds. Results: Group-level mGPS improved from childhood to adulthood, while NWS significantly declined. Individual outcomes varied by CP type: patients with bilateral CP GMFCS II–III showed more frequent decline in mGPS (29%) and limited improvement potential, while unilateral CP participants showed less decline and more improvements. Conclusions: Although gait quality improves by early adulthood, individuals with bilateral CP experience substantial decline later in adulthood. Findings support the need for lifelong monitoring and consideration of surgical interventions during adulthood for those with greater motor impairments..
PMID: 41597165

4.Synergistic muscle coordination of the Paralympic wheelchair tennis champion

Nadaka Hakariya, Takuya Murakami, Naotsugu Kaneko, Kimitaka Nakazawa

Front Sports Act Living. 2026 Jan 12;7:1717457. eCollection 2025.

Introduction: This study aimed to elucidate muscle coordination patterns in a Paralympic gold-medal wheelchair tennis player. The “Paralympic brain” concept describes use-dependent and impairment-specific neuroplasticity and provides context for motor coordination strategies.
Methods: Muscle synergy analysis was performed on EMG recordings during the tennis serve from two male players: a Paralympic/world champion (P1) and a nationally ranked sub-elite player (P2). EMG recordings from 14 muscles and high-speed video were collected during three flat serves.
Results: Serve velocity was markedly higher in P1 (167 ± 11.3 km/h) than P2 (80.0 ± 8.9 km/h). Four muscle synergies were identified in P1 and three in P2. A synergy unique to P1, dominant in early takeback and involving lower trapezius and triceps brachii, may contribute to greater trunk rotation and higher serve velocity. Muscle synergy sparseness was also higher in P1.
Discussion: Elite serve performance in wheelchair tennis appears supported by specialized neuromuscular coordination optimizing trunk rotation and energy transfer. Findings align with broader ideas of impairment-related neuroadaptation described in the “Paralympic brain” framework.
PMID: 41602812

5.New Method to Motivate Participation in Daily Life/Everyday Life Activities Using Sensor-Based Smart Application Translating Intention into Action (TIA)

Morten Freiesleben, Anina Ritterband-Rosenbaum, Mikkel Damgaard Justiniano

Sensors (Basel). 2026 Jan 13;26(2):539.

Background: This study explored a new approach to increasing participation in daily life among individuals with severe movement impairments using an application designed to Translate Intentions into Action (TIA) as a motivational tool for leisure and clinical settings. Methods: The TIA application enabled users to activate motivational feedback such as sounds, music or videos through movements detected by individually calibrated inertial measurement units. TIA was tested across two age groups to assess applicability across lifespan and motor abilities. Results: Findings indicated increased participation when positive movement-activated feedback was provided. Regardless of age or motor capacity, users demonstrated enhanced engagement. TIA showed substantial potential to improve motivation and participation for individuals with severe disabilities. Conclusions: By enabling personalized, positive feedback through movement-activated outputs, TIA can support meaningful engagement in activities for individuals with diverse motor abilities and may be valuable in both clinical and leisure contexts.
PMID: 41600335

6.Burden of pneumococcal disease among adults with cerebral palsy

Daniel G Whitney

Disabil Health J. 2026 Jan 27. Online ahead of print.

Background: People with cerebral palsy (CP) may have an elevated risk of pneumococcal disease, which is a vaccine-preventable disease, but this has not been studied.
Objective: To compare the initial rate and number of incident pneumococcal disease events up to 9-years between adults with vs. without CP.
Methods: This retrospective cohort study accessed a 20% random Fee-For-Service Medicare dataset from the Centers for Medicare and Medicaid Services, including claims from adults ≥18 years old with CP and elderly ≥65 years without CP from 01/01/2008–12/31/2019. The incidence rate (IR) per 1000 person-years, IR ratio (IRR), and the number of distinct events of all -cause pneumonia, pneumococcal pneumonia, and invasive pneumococcal disease were estimated for each cohort up to 9 years of follow-up.
Results: The IR and IRR of the first event were higher for adults with CP ≥18 years old compared to elderly without CP for all-cause pneumonia (IR[95% CI] = 71.24[69.85–72.63] and 40.10[40.04–40.16], respectively; IRR[95% CI] = 1.78[1.74–1.81]), pneumococcal pneumonia (IR[95% CI] = 6.27[5.90–6.64] and 2.44[2.43–2.46], respectively; IRR[95% CI] = 2.57[2.42–2.72]), and invasive pneumococcal disease (IR[95% CI] = 0.64[0.52–0.75] and 0.26[0.26–0.27], respectively; IRR[95% CI] = 2.44 [2.04–2.93]). Among those with outcome events, adults ≥18 years old with CP had a higher number of distinct all-cause pneumonia and pneumococcal pneumonia events compared to elderly without CP. Notably, when stratified by sex and age group, the IR of pneumococcal pneumonia for both men and women with CP was comparable between the youngest age group (18–25 years old) and elderly ≥75 years old without CP.
Conclusions: Findings suggest the at-risk window for pneumococcal disease begins about four decades earlier for people with CP compared to the general population. Prevention efforts may need to consider implementing strategies earlier in the lifespan for this population.
PMID: 41611581

7.Characteristics and Outcomes of Adults Hospitalized With Childhood-Onset Complex Chronic Conditions

Sarah L Malecki, Trong Shen, Anne Loffler, Therese A Stukel, Claire de Oliveira, Surain B Roberts, Anne S Bassett, Kate E Nelson, Fahad Razak, Amol A Verma, Eyal Cohen

JAMA Netw Open. 2026 Jan 2;9(1):e2553610.

Importance: Individuals with childhood-onset complex chronic conditions (4Cs) are increasingly surviving to adulthood, but the impacts of these conditions on the adult health care system are largely unknown.
Objective: To identify and characterize young adults with 4Cs in hospitals and compare their outcomes with other hospitalized young adults.
Design, setting, and participants: This retrospective cohort study included young adults aged 18–39 years discharged from 29 hospitals in Ontario, Canada, in 2018. Analyses were performed from November 2024 to April 2025.
Exposure: Childhood-onset complex chronic conditions identified using an adaptation of a widely used pediatric algorithm.
Main outcomes and measures: Primary outcomes were hospital length of stay, in-hospital mortality, and intensive care unit admissions. Secondary outcomes were total cost, number of medications, number of imaging scans, and 30-day readmission rates. Propensity-score–weighted regression was used for outcome assessment.
Results: Among 19 915 hospitalizations (15 072 patients), 1329 (6.7%) were associated with 4Cs in 814 individuals (5.4%). The most common underlying conditions were hereditary anemias, cystic fibrosis, and cerebral palsy. Hospitalizations involving 4Cs accounted for 10.7% of all young-adult hospital bed-days. Compared with those without 4Cs, affected patients had longer hospital stays, higher total costs, more medications, fewer advanced imaging scans, and higher 30-day readmission rates. No significant differences were found in ICU admissions or in-hospital mortality.
Conclusions and relevance: Young adults with 4Cs accounted for a disproportionate share of acute-care bed-days and rehospitalizations. Findings highlight a need for targeted efforts to reduce inpatient stays and improve care.
PMID: 41604155

8.Exploring behavioral dynamics: an in-depth analysis of adult students with disabilities

Ravi P Pandey, Shahma Shirin, Tanya Sharma, Vivek Singh, Komal Bumra, Manshi Tanwar, Vidushi Dixit, Shantesh Kumar Singh, Indu Bala, Pradip Kumar Gupta, Mithilesh Kumar Tiwari, Purnima Awasthi, Manisha Rani, Kriti Singh, Vikash Kumar

Front Rehabil Sci. 2026 Jan 12;6:1653140. eCollection 2025.

Background and aim: This qualitative study examined the behavioral nuances of disabled students in relation to their interactions with siblings and schoolmates. The aim was to explore behavioral dynamics through the perspectives of siblings, parents, and teachers using a systematic thematic analysis.
Method: Data were collected at the Vilak Foundation in Malappuram, Kerala through semi-structured interviews with five teachers and with parents of 20 adults with disabilities, including autism spectrum disorder, cerebral palsy, abnormal brain growth, and Down syndrome.
Results: Thematic analysis produced 47 codes and nine themes: introversion, communication factors, aggression, attachment behavior, emotional awareness, morality, empathy, envy, and inappropriate sexual behaviour.
Discussion: Extracted and translated verbatim descriptions highlighted the importance of attachment, avoidance, and emotional intelligence in strategies supporting emotional health and social competence among disabled adult students.
PMID: 41602580

9.Diagnosis-Specific Links Between Physical Activity and Sleep Duration in Youth with Disabilities: A Systematic Review with Quantitative Synthesis

Janette M Watkins, Martin E Block, Janelle M Goss, Emily M Munn, Devan X Antczak

Int J Environ Res Public Health. 2026 Jan 19;23(1):121.

Abstract
Children and adolescents with disabilities face disproportionate challenges in achieving adequate physical activity (PA) and sleep. This systematic review examined associations between PA guideline adherence and sleep duration in youth with disabilities. Following PRISMA guidelines, 28 studies (N = 138,016) assessing PA and sleep via subjective or objective measures were included. Diagnosis type was associated with sleep duration, with those with autism spectrum disorder (ASD) exhibiting shorter sleep than youth with physical disabilities. Meeting PA guidelines (≥60 min/day) was associated with longer sleep for youth with ASD but not consistently across other disability groups. Qualitative findings revealed diagnosis-specific variability: PA was positively associated with sleep in ASD, ADHD, and epilepsy, with mixed associations in cerebral palsy and intellectual disability. Results suggest PA may support sleep health in certain disability subgroups and highlight the need for accessible, diagnosis-specific PA interventions.
PMID: 41595915

10.Investigation of the Sleep Quality of Children Ages 4 to 6 Yr With Cerebral Palsy and Cerebral Visual Impairment and Their Caregivers' Sleep Quality and Levels of Depression and Anxiety

Mustafa Cemali, Duygu Mine Alataş, Demet Öztürk, Mustafa Sarı, Aynur Ayşe Karaduman

Am J Occup Ther. 2026 Mar 1;80(2):8002205050.

Importance: Sleep disturbances are common in children with cerebral palsy (CP) and may worsen with cerebral visual impairment (CVI). Objective: To compare sleep quality between children with CP with and without CVI and their caregiver mothers; secondarily, to compare maternal anxiety and depression and examine associations between child visual function and well-being outcomes. Design: Cross-sectional comparative study (Nov 2023–Apr 2024). Participants: Eighty-four children with CP aged 4–6 years (42 with CVI, 42 without) and their primary caregiver mothers. Outcomes and measures: Child sleep was assessed with the CSHQ; visual functioning with the VFCS; mothers' sleep via the PSQI; maternal anxiety and depression with the BAI and BDI. Results: Children with CVI had significantly higher CSHQ scores, and their mothers had significantly higher PSQI, BAI, and BDI scores. VFCS scores correlated with all child and maternal outcomes. Children's sleep quality was the main predictor of maternal anxiety and depression. Conclusions and relevance: CVI in children with CP is associated with poorer sleep and higher psychological burden in caregivers. Children's sleep quality strongly influences maternal mental health, underscoring the need for integrated visual and sleep-focused rehabilitation.
Plain-Language Summary: This study found that children with cerebral palsy and cerebral visual impairment had poorer sleep quality, and their mothers exhibited lower sleep quality and higher levels of psychological distress. The children's reduced visual functioning was found to be associated with poorer sleep quality and higher psychological distress. Children's sleep quality emerged as the primary factor influencing maternal mental health. It is recommended that visual and sleep issues for children with cerebral palsy and cerebral visual impairment be addressed together in the rehabilitation process. Further studies are needed to translate these findings into clinical practice.
PMID: 41592530

11.Sleep and development in cerebral palsy

Jacopo Proietti, Gaetano Cantalupo, Geraldine B Boylan

Pediatr Res, 2026 Jan 26. Online ahead of print.

Abstract
Sleep plays a critical role in child and adolescent development, supporting physical growth, cognition, and emotional regulation. Children with cerebral palsy (CP) experience higher rates of sleep disturbances compared to children without CP, including difficulties initiating and maintaining sleep, sleep disordered breathing, and excessive daytime sleepiness. These disruptions can further hinder developmental progress. While sleep research has highlighted the importance of sufficient quality sleep for cognitive and behavioral growth in typically developing children, the complexities of CP make it challenging to establish a clear link between sleep disturbances, comorbidities, and developmental outcomes. The severity of clinical phenotype and comorbidities contribute to sleep difficulties in CP. Despite the critical need for objective sleep assessments like EEG-polysomnography, most research relies on caregiver reports, which are not always validated for this population. The current body of research also faces limitations, including small sample sizes and a lack of longitudinal studies on the long-term impact of sleep disturbances in children with CP. Future research should prioritize large-scale longitudinal and comparative studies and utilize objective tools to improve early diagnosis and guide the development of therapeutic interventions, ultimately enhancing developmental outcomes during the critical stages of neuroplasticity in early childhood.
PMID: 41588249

12.Preoperative gastric ultrasound in children with cerebral palsy: a cross-sectional observational study

Cristiane de Pauli Bernardin, Juliana Thomaz Menck, Bruna Bastiani Dos Santos, Jorge Eduardo Fouto Matias

Braz J Anesthesiol, 2026 Jan 24. Online ahead of print.

Background: Pulmonary aspiration during anesthesia, though rare, can be catastrophic. Gastric ultrasound provides an objective assessment of gastric contents and may be particularly relevant for children with Cerebral Palsy (CP), who are at risk of delayed gastric emptying.
Methods: We conducted a cross-sectional study in a pediatric hospital including children scheduled for elective surgery per ASA fasting guidelines. Preoperative gastric ultrasound measured antral CSA in right lateral decubitus, and gastric volume was estimated using the Perlas formula. Fasting time, medication use, and clinical data were recorded. Group comparisons used Wilcoxon, Fisher's exact, or Chi-Square tests; multiple linear regression adjusted for confounders.
Results: Sixty-two children were studied: 30 with Cerebral Palsy (CP) and 32 controls. No patient exceeded the high-risk gastric volume threshold (1.5 mL.kg-1) and no surgeries were cancelled. CP patients had shorter fasting times (6.5 vs. 8.0h; $p < 0.001$) and higher medication use (47% vs. 6.3%; $p < 0.001$). Gastric CSA (4.0 vs. 3.0 cm2; $p < 0.001$) and estimated gastric volume.kg-1 (0.7 vs. 0.4 mL.kg-1; $p < 0.001$) were greater in CP. Multivariable models showed attenuation, but quantile regression confirmed higher lower CSA (+1.25 cm2; $p = 0.007$). Excluding medication users, CP remained associated with greater gastric volume.
Conclusions: Children with cerebral palsy exhibit larger CSA and higher gastric volumes despite adequate fasting. Although clinically safe, these findings support the role of gastric ultrasound in preoperative risk assessment for this vulnerable group.
PMID: 41587691

13.Melatonin for Sleep Problems in Children with Cerebral Palsy: Bridging Evidence and Clinical Practice

Shubha Sn, Biswaroop Chakrabarty

Indian J Pediatr, 2026 Jan 26. Online ahead of print.

Abstract
No abstract available.
PMID: 41587003

14.Sensory Reinforcement Feedback Using Movement-Controlled Smartphone App Facilitates Movement in Infants with Neurodevelopmental Disorders: A Pilot Study

Anina Ritterband-Rosenbaum, Jens Bo Nielsen, Mikkel Damgaard Justiniano

Sensors (Basel). 2026 Jan 14;26(2):554.

Abstract
New wearable technology offers opportunities for low-cost, accessible home-based interventions supplementing clinical rehabilitation. This pilot study tested an interactive adjustable feedback training system in 14 infants aged 2–12 months at high risk of cerebral palsy to facilitate increased movement. The system comprised four wireless inertial sensors placed on limbs, with movement-contingent auditory and visual feedback. The intended dosage was 15 minutes, four times per week for six months; none reached full dosage due to time limitations, although seven of twelve infants achieved at least 50% of recommended training. Parents reported the system as easy to use with minimal technical support needed. Preliminary findings suggest infants engaged more actively during sessions where their movements controlled the stimuli. The training system appears promising as a user-friendly add-on for playful, interactive stimulation of motor and cognitive development in infants with neurodevelopmental disorders.
PMID: 41600351

15.Functional Electrical Stimulation (FES) in Adults with Neurological Disorders and Foot Drop: Orthotic and Therapeutic Effects in Short- and Long-Term Users

Niklas Bleichner, Merkur Alimusaj, Daniel W W Heitzmann, Andreas Stähle, Claudia Weichold, Cornelia Putz, Herta Flor, Frauke Nees, Sebastian I Wolf

Bioengineering (Basel). 2026 Jan 8;13(1):71.

Abstract
Functional electrical stimulation (FES) is widely used to improve gait, yet early responses among adults with congenital neurological conditions newly exposed to FES are poorly characterized. This longitudinal study examined orthotic and therapeutic FES effects using 3D gait analysis in short-term users (n = 13) and long-term users (n = 11). Short-term users showed therapeutic adaptations such as increased walking speed and step length and reduced step width, along with decreased dorsiflexion during stance and swing; no clear orthotic effects were observed. Long-term users demonstrated orthotic responses including increased dorsiflexion at heel strike and during swing, with improved gait parameters and minimal additional therapeutic changes. The initial reduction in dorsiflexion among short-term users requires further investigation. Findings suggest evaluation timelines may need extension and outcome measures should extend beyond foot clearance given heterogeneity and severity.
PMID: 41596002

16.Breaking barriers to rehabilitation for children with disabilities in low- and middle-income countries: A call for multifaceted, context-specific action

Thembi J Katangwe-Chirwa

Dev Med Child Neurol. 2026 Jan 30. Online ahead of print.

Abstract
No abstract available
PMID: 41615406

17.Neonatal Seizures Were Associated With Higher Mortality, Epilepsy and Cerebral Palsy in Term-Born Children up to 5 Years of Age

Jostein Lappegård, Ulrik Båtstrand Lyeng, Ragnhild Støen, Dag Moster, Anlaug Vatne, Tone Nordvik, Beate Horsberg Eriksen, Ingebjørg Fagerli, Arild Erland Rønnestad, Claus Klingenberg

Acta Paediatr. 2026 Jan 29. Online ahead of print.

Aim: This study described the aetiological factors associated with neonatal seizures and the risks for adverse neurological outcomes.
Methods: We identified all infants born at ≥36 weeks of gestation between 2009 and 2015 who were diagnosed with or treated for neonatal seizures and registered in the Norwegian Neonatal Network. Data from four nationwide registries provided information on perinatal factors and neurological outcomes until 5 years of age.
Results: There were 892 infants with seizures, an incidence of 2.2 per 1000 live births. More than half (58.5%) underwent electroencephalography monitoring and examinations. Mortality before discharge was 8.4% and deaths occurred a median of 5 days after birth. The most frequent presumed aetiology was moderate to severe hypoxic-ischaemic encephalopathy (25.1%). Of the 817 survivors, 115 (14.1%) were diagnosed with post-neonatal epilepsy, 119 (14.6%) with cerebral palsy (CP), and 43 (5.3%) had both diagnoses. Epilepsy risk was greatest after neonatal encephalopathy with normal Apgar scores (40.9%), and CP risk was greatest after ischaemic stroke (29.9%).
Conclusion: Neonatal seizures were associated with high mortality, and about a quarter were later diagnosed with epilepsy and/or CP. Improved access to electroencephalography could improve diagnostics.
PMID: 41609421

18.Communication Functions and Communicative Behaviours in Children With Cerebral Palsy

Büşra Aşıroğlu, Namık Yücel Birol

Int J Lang Commun Disord. 2026 Mar–Apr;61(2):e70204.

Background: Children with cerebral palsy (CP) frequently experience communication difficulties that limit participation and social interaction, and few studies have examined communication functions and behaviours using the structured Communication Matrix in contexts with limited AAC use. Aims: This study examined communication functions and communicative behaviours of Turkish children with CP using the Communication Matrix and explored differences across gross motor function levels. Methods: This cross-sectional study included 64 children with CP aged 4–18 years attending special education and rehabilitation centres in Türkiye. Data were collected using the Communication Matrix, GMFCS, MACS, VSS and CFCS. Descriptive statistics were generated and non-parametric tests were used due to violations of normality. Results: Obtaining and social interaction were the most prominent communication functions, while refusal and providing information were less common. Visual behaviours (41.88%) and conventional gestures (37.75%) were most frequent, whereas abstract symbols (9.51%), concrete symbols (19.53%) and body movements (13.45%) were less common. Children at GMFCS Level V demonstrated significantly lower symbolic communication and lower scores across all communication functions than Levels I–IV. Overall communicative competence decreased with greater motor impairment. Conclusions: Children with CP relied mainly on nonverbal strategies such as gestures and visual behaviours, with limited symbolic communication, especially in severe motor impairment. Higher-level communication functions were less frequent and declined with increasing GMFCS level, underscoring the relationship between motor functioning and communicative complexity and the importance of early AAC-focused interventions.
What this paper adds: What is already known on this subject Children with cerebral palsy (CP) often experience significant communication difficulties that restrict their participation in daily life. Previous research has documented the reliance of children with CP on nonverbal communication modes and the association between motor severity and communication outcomes, but systematic analyses using the structured framework of the Communication Matrix are scarce, particularly in Türkiye where AAC use is limited. What this paper adds to existing knowledge This study systematically examined communicative functions and behaviours in Turkish children with cerebral palsy using the Communication Matrix. The findings showed that obtaining and social interaction were the most frequently observed communicative functions, whereas refusal and providing information were less common. Symbolic communication, particularly abstract symbols and spoken language, was markedly limited, especially among children with severe motor impairments. These results highlight the close association between motor severity and communicative complexity, offering valuable evidence to inform both clinical practice and future research. What are the potential or actual clinical implications of this work? The findings underscore the urgent need to integrate augmentative and alternative communication (AAC) strategies into rehabilitation and educational services in Türkiye. The Communication Matrix is demonstrated as a practical tool for identifying individualized communication targets and monitoring progress, supporting more effective clinical decision-making and intervention planning.
PMID: 41601460

19.Undernutrition and Feeding Difficulties Among Children with Disabilities in Uganda: A Cross-Sectional Study

Zeina Makhoul, Moses Fisha Muhumuza, Bella Kyarisiima, Grace Amongin, Maria Nakibirango, Carolyn Moore, Daniella Akellot, Lutgard Musiime, Doreen Alupo, Lorna Mary Namususwa, Pamela Magero, Kate Miller, Douglas Taren

Nutrients. 2026 Jan 8;18(2):200.

Background/Objectives: Inclusive nutrition services and data on children with disabilities in low- and middle-income countries are limited. This study estimated the prevalence of undernutrition, described feeding practices and difficulties among children with disabilities aged birth to 10 years at a Ugandan rehabilitation hospital, and identified barriers to inclusive nutrition. Methods: This cross-sectional study enrolled 428 children. Data included demographics, anthropometry, hemoglobin, risk for feeding difficulties, caregiver-reported feeding practices, and functional difficulties, supplemented by 32 interviews. Undernutrition was defined using WHO z-scores, MUAC, and anemia cutoffs. Associations were evaluated using chi-squared tests and adjusted odds ratios. Results: Participants were mostly boys (56.1%) and younger than 24 months (65.9%). Common disabilities were cleft lip/palate (55.4%) and cerebral palsy (38.6%). Undernutrition prevalence was high: 45.2% underweight, 38.3% stunted, 16.1% wasted, and 39.5% anemic. Risk for feeding difficulties (67.2%) increased odds of underweight, stunting, and wasting. Bottle-feeding increased stunting risk among infants with cleft lip/palate <12 months. Barriers included poor service access, food insecurity, and feeding challenges. Most caregivers reported responsive feeding practices. Conclusions: High undernutrition rates, strongly associated with feeding difficulties, highlight the need for targeted feeding interventions and improved access to inclusive nutrition services in Uganda.
PMID: 41599813

20.Assessment of the Brazilian Portuguese Version Selective Control Assessment of the Lower Extremity (SCALE) After Translation and Cross-Cultural Adaptation

Douglas Manuel Carrapeiro Prina, Elizabeth de Alvarenga Borges da Fonseca, Pothyra Campos Pascoal, Francesco Camara Blumetti, Monica Paschoal Nogueira

Children (Basel). 2026 Jan 13;13(1):115.

Background/Objectives: This study aimed to translate and validate the Selective Control Assessment of the Lower Extremity (SCALE) tool from English into Portuguese. Methods: SCALE was translated into Portuguese by two native translators and synthesized into a single version (SCALE-BR). Internal consistency (Cronbach's α), intra-class correlation coefficients, and validity against GMFCS levels were evaluated in patients with spastic cerebral palsy. Results: Thirty patients were assessed; mean age was 12.9 ± 7.9 years, most were diparetic and GMFCS I. SCALE scores demonstrated an inverse correlation with GMFCS (Spearman $R^2 = –0.84$, $p < 0.001$). Intra- and inter-observer agreement was excellent (ICC > 0.75). Conclusions: The Portuguese SCALE version showed strong reliability, reproducibility, and expected inverse association with GMFCS levels.
PMID: 41597123

21.Lived experiences of mothers caring for children with cerebral palsy in Rwanda: a phenomenological study

Jean Paul Niyigaba, Thierry Claudien Uhawenimana, Vedaste Bagweneza, Judith Mbarushimana, Winifride Murekatete, Larissa Flave Ishimwe

BMC Pediatr. 2026 Jan 27. Online ahead of print.

Abstract
No abstract available
PMID: 41593537

22.Upper-limb range of motion in children with cerebral palsy treated with botulinum neurotoxin: a population-based cohort study

Jenny Hedberg-Graff, Fredrik Granström, Marianne Arner, Elisabet Rodby-Bousquet, Lena Krumlinde-Sundholm

BMC Musculoskelet Disord, 2026 Jan 26;27(1):65.

Background: Our aim was to investigate change over time of passive range of motion (pROM) in the upper limbs of children with cerebral palsy (CP), treated or not treated with botulinum neurotoxin-A (BoNT-A).
Methods: Data from 2000 to 2017 were collected from the Cerebral Palsy follow-up program and registry in Sweden (CPUP) for children with spastic or dyskinetic CP. Mixed models were used to analyse changes in pROM from the first, until the last measurement for five upper limb movements.
Results: The study involved 496 children with CP, aged 1–15 years (median 2 years, interquartile range = 4). Of these, 22% had received at least one BoNT-A treatment. Contractures were classified as red (severe) or yellow (moderate) based on the Traffic Light system within CPUP. About 36% developed upper limb contractures before age 15. Early BoNT-A treatment (<4 years) implied better pROM outcomes over time compared with later treatment, after adjusting for pROM category, CP subtype and level of manual ability.
Conclusions: Upper limb contractures can develop during growth in children with CP affecting one third of this population. Early monitoring of pROM can detect the first signs of muscle shortening before contractures are established. Our findings suggest that early BoNT-A treatment may help maintain pROM in children with CP.
PMID: 41588536

23.Updated description of cerebral palsy

Bernard Dan, Peter Rosenbaum, Lucinda Carr, Martin Gough, John Coughlan, Nonyelum Nweke

Dev Med Child Neurol. 2026 Jan 29. Online ahead of print.

Abstract
Cerebral palsy (CP) is a widely used descriptive label for a spectrum of motor impairments caused by non-progressive brain injury or malformation during early development. Recent advances in genetics, inflammation research, and neurophysiology have refined scientific understanding of CP, and studies in diverse global contexts, including low- and middle-income countries, have broadened knowledge of its clinical presentation. Shifting societal perspectives, particularly those informed by individuals with lived experience, have challenged ableist assumptions and promoted conceptual frameworks that are more inclusive. Growing recognition of the lifelong needs of adults with CP has further emphasized the necessity of appropriate services across the lifespan. This manuscript presents an updated description of CP, developed through a collaborative, multidisciplinary process integrating stakeholders' perspectives. A comprehensive stakeholder analysis and mapping strategy ensured wide representation, including individuals with CP, families, clinicians, researchers, and advocacy organizations. Data were collected using surveys, interviews, focus groups, and workshops, enabling a global dialogue that combined lived experience with clinical and scientific expertise. An annotation of 26 specific terms of the updated clinical description supports a clearer and more inclusive shared understanding of CP. We also present a more accessible plain-language version of the description, as well as a single-sentence summary. The updated description is intended as a framework to guide clinical practice, research, and policy, to advance the care, participation, and inclusion of individuals with CP.
PMID: 41612151

24.Maternal repressed anger and child behavioral problems in cerebral palsy: a Bayesian path analysis

Pınar Algedik, Duygu Kurtuluş, Ayşe Merve Ata, Gülhan Sözen, Ezgi Şen Yılmaz, Bahadır Turan

Front Psychiatry. 2026 Jan 12;16:1637492. eCollection 2025.

Abstract
Cerebral palsy (CP) is frequently accompanied by psychiatric comorbidities, and caregiving imposes significant psychological burdens on mothers. This cross-sectional case-control study examined relationships among repressed anger, depression, anxiety, and stress in mothers of children with CP, and their associations with children's behavioral problems using Bayesian path analysis. The study included 28 children with CP and their mothers and 60 matched healthy controls. Children were assessed with the Child Behavior Checklist, and mothers completed validated measures of depression, anxiety, stress, anger, and parenting attitudes. Six Bayesian models were constructed within the CP group to examine mother-child psychological interactions. Mothers of children with CP demonstrated significantly higher anxiety, stress, trait anger, and expressed anger than controls. Modeling showed that repressed anger increased maternal depression and stress, which in turn affected children's internalizing and externalizing symptoms. Models explained 20.7%–40.4% of variance in child behavior. Findings highlight the relevance of mother-focused interventions addressing anger and emotional regulation within CP rehabilitation.
PMID: 41601499

25.Multidimensional Analysis of Parent-Perceived Quality of Life in Children with Cerebral Palsy: A Cross-Sectional Study

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Children (Basel). 2026 Jan 15;13(1):128.

Background/Objectives: This study analyzed parent-perceived quality of life (QoL) in children with cerebral palsy (CP) and examined associations with sociodemographic and clinical factors within the ICF framework. Methods: A cross-sectional study of 95 children aged 5–19 years collected sociodemographic, clinical, and functional data along with CP-QoL and PEDI-CAT responses. Functional domains included GMFM-88, GMFCS, MACS, EDACS, and CFCS. Spearman correlations assessed associations; multivariate models evaluated predictors of QoL domains. Results: Mean age was 12.4 years. Participants showed moderate–high GMFM-88 levels and high functional performance on PEDI-CAT. QoL was higher for children without AFOs, botulinum toxin use, or recent hospitalizations, and lower for those receiving >2h/week of physical therapy. Moderate correlations emerged between the 'Feelings about Functioning' domain and functional measures—positive with GMFM-88 and PEDI-CAT domains, negative with GMFCS, MACS, EDACS, and CFCS. A regression model explained 61.9% of the variance, with GMFM-88, PEDI-CAT Activity, and PEDI-CAT Social/Cognitive as key predictors. Conclusions: Parent-perceived QoL in children with CP is strongly influenced by manual ability and functional performance. Interventions should emphasize social participation and balance therapy intensity with family burden.
PMID: 41597136

26.Experiences of a Mindfulness-Based Telehealth Program Modified for Adults with Cerebral Palsy – A Qualitative Study

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Healthcare (Basel). 2026 Jan 13;14(2):197.

Backgrounds/Objectives: Mindfulness-based stress reduction (MBSR) programs may be beneficial for adults with cerebral palsy (CP), who are at heightened risk of mental health challenges, yet little is known about their experiences in such programs. This study explored experiences of adults with CP and a facilitator who participated in a 9-week MBSR telehealth program. Methods: Adults who attended the program were invited to focus groups or semi-structured interviews; the facilitator also completed an interview. All transcripts were analyzed thematically using Framework Analysis. Results: Ten adults and one facilitator participated. Three themes emerged: learning and creating a mindfulness toolbox; applying mindfulness to daily life; and online together with expert facilitation. Participants valued a variety of techniques, peer learning, and online accessibility. Recommendations included a group orientation, shorter sessions to reduce fatigue, and follow-up meetings to maintain skills. Conclusions: Findings provide insight into adults with CP participating in telehealth-delivered MBSR and offer recommendations for future implementation.
PMID: 41595333

Prevention and Cure

27.Demonstrating the value for money of implementing evidence-based treatment: the case for further investment in magnesium sulphate as a neuroprotectant for preterm births

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Front Health Serv. 2026 Jan 12;5:1655385. eCollection 2025.

Background: Effective and cost-effective treatments are often not optimally implemented, resulting in forgone benefit. Incremental net monetary benefit (INMB) offers a way to quantify this loss and inform decisions about future quality improvement (QI) initiatives. Using antenatal magnesium sulphate ($MgSO_4$), a cost-effective neuroprotective treatment for preterm birth, this study estimated optimal implementation, INMB lost due to sub-optimal uptake, and the value of future QI strategies.
Methods: $MgSO_4$ uptake for babies under 32 weeks' gestation was assessed using routine data from England, Scotland, and Wales (2014–2022). Optimal uptake was defined using clinical judgment. Societal lifetime INMB was obtained from existing literature. INMB forgone over time was calculated as the difference between optimal and actual uptake. Cost-effectiveness of a hypothetical future QI programme was modelled using different cost and uptake scenarios.
Results: Optimal $MgSO_4$ uptake was 95%. INMB forgone declined over time but remained substantial in 2022 (£18.2m in England, £3.7m in Scotland, £1.0m in Wales). A future QI programme achieving a 5% uptake increase at a cost of £987,500 would be cost-effective, generating £7.5m in INMB. Results indicate future implementation initiatives are likely to be cost-effective across a realistic range of assumptions.
Conclusions: Sub-optimal implementation of $MgSO_4$ represents large opportunity costs. INMB provides a valuable method to quantify the value for money of future QI programmes and support improved implementation of evidence-based interventions.
PMID: 41601469

28.Postnatal corticosteroids and bronchopulmonary dysplasia: balancing pulmonary and neurologic effects to enable individualized decision-making

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Purpose of review: To summarize existing evidence about the long-term effects of bronchopulmonary dysplasia (BPD) and postnatal corticosteroid (PNC) treatment to enable evidence-based risk-stratification and individualized decision-making in very preterm (<32 weeks' gestation) infants.
Recent findings: BPD remains a top risk factor for neurodevelopmental impairments (NDI) or death and BPD rates are rising in Western nations. Conversely, clinical trials and meta-regression data suggest medium (2–4 mg/kg cumulative dose) or high dose (4–8 mg/kg) dexamethasone use after a week of age reduces BPD/death and may improve or at worst have no effect on survival without NDI, as compared to placebo. Data from a validated meta-regression of all dexamethasone RCTs suggest dexamethasone effects are modified by the baseline risk of BPD: in infants with >50–70% risk of BPD, dexamethasone improved survival free of cerebral palsy, but had an opposite effect when BPD risk was <30%. A recent network meta-analysis of all PNC RCTs identified: moderately early-initiated (days 8–14), medium dose dexamethasone provided the largest reduction in BPD/death; high dose courses between 8 and 27 days were also highly effective; low dose dexamethasone, hydrocortisone, and inhaled or intratracheal steroids are ineffective or exhibit low potency in reducing BPD/death.
Summary: Current evidence supports the use of medium dose systemic dexamethasone—preferably between days 8 and 14 in ventilator-dependent infants at >50–70% risk of developing BPD. While more NDI follow-up data are needed, this regimen is proven to reduce BPD risk and may also reduce NDI risk, considering PNC effects on BPD reduction appear stronger than any direct NDI toxicity. Practical suggestions are provided to enable transition from the current prevalent use of late initiated (>3–4 weeks of age), low dose dexamethasone to moderately early, medium dose dexamethasone to reduce the ongoing high rates of BPD in very preterm infants.
PMID: 41589747

29.Neurodevelopmental outcomes in different types of neonatal stroke

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Zhongguo Dang Dai Er Ke Za Zhi, 2026 Jan 15;28(1):23-29.

Objectives: To investigate the long-term neurodevelopmental outcomes of neonates with different types of stroke.
Methods: Data from 41 neonates diagnosed with stroke at the Third Affiliated Hospital of Zhengzhou University between January 2017 and May 2024 were retrospectively reviewed. Stroke types included arterial ischemic stroke (AIS), hemorrhagic stroke (HS), and cerebral sinovenous thrombosis (CSVT). All infants were followed to 2 years of age. Neurodevelopmental outcomes were assessed using the Bayley Scales of Infant and Toddler Development, Third Edition (BSID-III), focusing on motor and cognitive development. Outcomes were compared according to vascular involvement.
Results: Of the 41 neonates, 35 (85%) had AIS, 5 (12%) had HS, and 1 (2%) had CSVT. Among the 35 AIS cases, 16 (46%) involved the main trunk of the middle cerebral artery (MCA). The incidences of cerebral palsy (CP) and cognitive developmental delay were significantly higher in the MCA main trunk group than in the non-main-trunk group ($P<0.05$). Among the 5 HS cases, 1 involving the frontal cortical branch of the MCA died at 12 days of life. Two cases involving the temporal cortical branches had BSID-III cognitive development indices of 102 and 106, and motor development indices of 90 and 95 at 2 years. The remaining 2 cases involving the MCA main trunk developed CP. The single CSVT case involved the great cerebral vein and presented with CP and language developmental impairment.
Conclusions: AIS is the most common type of neonatal stroke and shows poorer outcomes by 2 years of age. Early identification and early intervention are essential in clinical practice.
PMID: 41582745