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The International Scientific Conference Progressio Infantis 2026

Book of abstracts

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Wrocław 2026

Student Scientific Club
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WROCLAW
MEDICAL UNIVERSITY

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„Knowledge Shaping the Future of the Youngest”

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International Conference Progressio Infantis 2026

„KNOWLEDGE SHAPING THE FUTURE OF THE
YOUNGEST”

29.05.2026

14:45 - 15:15	REGISTRATION OF PARTICIPANTS
15:15 - 15:30	OFFICIAL OPENING OF THE CONFERENCE <i>Vice Dean of the Faculty of Physiotherapy Dr Marta Majewska-Pulsakowska</i>
15:30 - 16:10	CONFERENCE OPENING LECTURE <i>Physical foundations for learning. Why neuromotor maturity matters. A review of studies carried out in the UK and Europe between 2005 and 2025 Goddard Blythe Sally (UK)</i>
SESSION 1	<i>Development – an interdisciplinary perspective</i> Moderators: <i>dr hab. Aleksandra Królikowska, dr Dagmara Chamela-Bilińska, dr Marta Majewska-Pulsakowska</i>
16:10 - 16:45	PRESENTATION OF WORKS <i>Time for presentations 20 min (including time for discussion and questions)</i>
16:10-16:25	<i>Using movement to support Primitive Reflex Integration</i> <i>Grigg Tessa (New Zealand)</i>
16:30 - 16:45	<i>Movement as a Driver of Central Nervous System Maturation in School-Aged Children: Feasibility Study of a School-Based Motor Programme</i> <i>Not Monegal Marta, Sallés Oller Laia, Tárrega Larrea Salomé, Ortega Ruiz Marta (Spain)</i>
16:50 - 17:05	COFFEE BREAK & GROUP PHOTO
17:05 - 17:50	WORKSHOP
17:05 - 17:50	<i>The consultation process and selection of custom orthopedic devices using direct scanning and traditional measurement via the plaster casting method OrthoFamily - Gugala-Kruczek Aleksandra (Poland)</i>
17:05 - 17:50	<i>Balance and coordination, as a tool to activate executive functions</i> <i>Blomniece-Jurāne Baiba (Latvia)</i>
17:50 - 18:00	END OF THE FIRST DAY OF THE CONFERENCE



International Conference Progressio Infantis 2026

„KNOWLEDGE SHAPING THE FUTURE OF THE YOUNGEST“

30.05.2026

8:55 - 9:00	OPENING OF THE SECOND DAY OF THE CONFERENCE
9:00 - 9:55	WORKSHOP
9:00 - 9:55	Relational Rehabilitation in Children: Moving Beyond Strength to Restore Safety, Agency, and Movement Taylor Sara (UK)
9:00 - 9:55	Normal Distress or Mental Health Concern? Recognising Clinically Significant Anxiety, Depression and Risk in Young People Taylor Matt (UK)
10:00 - 10:30	OPENING LECTURE A Child in a Flood of Feelings and Emotions <i>(about books supporting the harmonious development of a child published in Poland in 2021-2024)</i> Staniów Bogumiła (Poland)
SESSION 2	Living with a diagnosis: Integrating therapy into the child's world Moderators: dr Marta Majewska-Pulsakowska, dr Aleksandra Wójcik, dr Ewa Gieysztor
10:30 - 11:00	PRESENTATION OF WORKS Time for presentations 15 min (including time for discussion and questions)
10:30 - 10:45	Zoom on the Infant - Why, When and How to Assess Infants Using Standardized Diagnostic Tools in the First Year of Life Chorażewska Iwona (Poland)
10:45 - 11:00	Assessment of the Impact of Postural Control on Static and Dynamic Balance in Children with Autism Spectrum Disorder and Attention-Deficit/Hyperactivity Disorder (ADHD) Using Clinical Observation and the Southern California Sensory Integration Tests Demiy Alina, Borowska Emilia, Białobrzeska Marlena, Urbański Paweł, Nieduziak Maria (Poland)
11:00 - 11:15	COFFEE BREAK
SESSION 3	Support for neuromotor development Moderators: prof. dr hab. Małgorzata Paprocka-Borowicz, MSc Alina Demiy, MSc Weronika Bajer
11:15 - 12:00	PRESENTATION OF WORKS Time for presentations 15 min (including time for discussion and questions)
11:15 - 11:30	Primitive Reflex Activity in Relation to Motor Skills in Healthy Preschool Children Pecuch Anna, Gieysztor Ewa, Wolańska Ewelina, Telenga Marlena, Paprocka-Borowicz Małgorzata (Poland)
11:30 - 11:45	The INPP-Method - A neurodevelopmental approach to support neuromotor maturity in children Lauff Johanna (Germany)
11:45 - 12:00	The tryVinci Project: Gamification of core and hip girdle exercises Rafał Kubacki (Poland)
12:00 - 12:30	LUNCH BREAK
SESSION 4	Interesting clinical cases in developmental age Moderators: dr Sylwia Piotrowska-Brudnicka, dr Aleksandra Wójcik, dr Ewa Gieysztor
12:30 - 13:20	PRESENTATION OF WORKS
12:30 - 12:45	From Discovery to Diagnosis: Genotype-Phenotype Correlations in Polish Patients with the Newly Identified ReNU Syndrome Telenga Marlena (Poland)
12:50 - 13:05	Crouch Gait in Cerebral Palsy - Evidence of Physiotherapeutic Interventions and Perspectives of Vojta Therapy Jakob Birgit (Germany)
13:05 - 13:20	Idiopathic(?) Scoliosis - Dura Mater perspective Hellali Sara (Italy)
13:20 - 13:35	COFFEE BREAK
13:35 - 14:20	PANEL DISCUSSION Young athletes - breaking barriers, creating solutions Moderators: Aleksandra Dawdziak, Martyna Maciejewska, dr Aleksandra Wójcik
	Oskar Piotrowski Wheelchair racing
	Piotr Siejwa Frame Running

SESSION 5.1	<p style="text-align: center;">POSTER SESSION Moderators: <i>prof. dr hab. Małgorzata Paprocka-Borowicz, MSc Weronika Bajer, MSc Baiba Blomniece-Jurāne</i></p> <p style="text-align: center;"><i>During the poster session, authors must remain with their posters at all times. Each participant will have approximately three minutes to answer questions from the committee.</i></p> <p style="text-align: center;"><i>The session is ongoing, so conference participants may approach the posters and ask the authors questions at any time.</i></p>
14:20 - 15:30	<p style="text-align: center;">PRESENTATION OF WORKS Time for poster presentations 3 min</p>
	<p style="text-align: center;">The Impact of Participation in an Active Rehabilitation Camp on Independence, Functional Ability, and Psychosocial Skill Development in Children Who Use Wheelchairs Drozdowska Weronika, Dawidziak Aleksandra (Poland)</p>
	<p style="text-align: center;">High school students' knowledge of the structure and function of the spine, the role of physical activity, and the need to apply ergonomic principles in everyday life Lisowska Karolina, Woźniak Wiktoria, Kyz Karolina, Gieysztor Ewa (Poland)</p>
	<p style="text-align: center;">Maternal and perinatal stress and its impact on maternal and newborn health, a systematic review of international literature Hasalla Elona, Taka Ilda, Fahriu Brandi, Hasalla Blerta, Baha Sulejman, Xhaferrri Irena, Ruci Elida (Albania)</p>
	<p style="text-align: center;">The influence of a vegetarian diet-shaped gut microbiome on children psychomotor development Janik Katarzyna, Rak Oliwia, Chlastawa Benedykt, Sztuka Marta, Jarczewska Emilia, Zuzanna Sycz (Poland)</p>
	<p style="text-align: center;">The Impact of Gut Microbiota Modulation and Dietary Interventions on the Developmental Outcomes in Children with Autism Spectrum Disorder: A Review of Recent Clinical Advances Sztuka Marta, Jarczewska Emilia, Janik Katarzyna, Rak Oliwia, Zuzanna Sycz (Poland)</p>
	<p style="text-align: center;">Early-Life Antibiotic Exposure as a Potential Risk Factor for Neurodevelopmental Disorders in Children Rak Oliwia, Janik Katarzyna, Chlastawa Benedykt, Jarczewska Emilia, Sztuka Marta, Zuzanna Sycz (Poland)</p>
	<p style="text-align: center;">The impact of dietary patterns on gut microbiome composition and clinical outcomes in children with type 1 diabetes Jarczewska Emilia, Sztuka Marta, Rak Oliwia, Janik Katarzyna, Zuzanna Sycz (Poland)</p>
	<p style="text-align: center;">The effect of Vojta therapy on autonomic nervous system activity in a newborn: a pilot observation using NIPE Oliwia Nowosielska, Anna Fonfara, Artur Polczyk, Patrycja Szpytma (Poland)</p>
	<p style="text-align: center;">The influence of dance on children's motor development at the age of 8 – 10 years Smolak Angelika, Zbytek Klaudia, Szymura Paulina, Strusińska Katarzyna, Gieysztor Ewa (Poland)</p>
	<p style="text-align: center;">Assessment of physical fitness of children aged 7-15 training karate Grzechowiak Lena (Poland)</p>
	<p style="text-align: center;">The Influence of Nutrition and Physical Activity on Oxidative Status in Pediatric Patients Following Hematopoietic Stem Cell Transplantation Daszyk Emilia, Raczyska Klaudia (Poland)</p>
	<p style="text-align: center;">Prefrontal Cortex Hemodynamic Changes After 19 Weeks of Neurodevelopmental Physiotherapy in an Eight-Year-Old Child with Central Nervous System Immaturity: A Case Study Gieysztor Ewa (Poland)</p>
	<p style="text-align: center;">Modern management of adolescent idiopathic scoliosis: more can be better - combining therapies for improved outcomes Wójcik Aleksandra, Juszek Karolina (Poland)</p>
SESSION 5.2	<p style="text-align: center;">STUDENTS PRESENTATIONS Moderators: MSc Tatiana Jagodzińska, dr Sylwia Piotrowska–Brudnicka, MSc Artur Polczyk</p>
	<p style="text-align: center;">PRESENTATION OF WORKS Time for presentations 10 min (including time for discussion and questions)</p>
	<p style="text-align: center;">The Role of Parents in the Early Detection of Cerebral Palsy Using Precht's General Movements Assessment Kolasa Anna, Szczygieł Kamila (Poland)</p>
	<p style="text-align: center;">Hypercalcemia in a mother and newborn with a heterozygous pathogenic variant in the CYP24A1 Jurczyk Małgorzata, Witkowska Katarzyna, Glapa Aleksandra, Chrzanoska Joanna (Poland)</p>
	<p style="text-align: center;">Comparison of foot arch structure and balance in children aged 8–11 practicing and not practicing karate Alasińska Karolina (Poland)</p>
	<p style="text-align: center;">Childbirth – but what about the mother? Stokowiec Natalia, Julia Dublańska, Stawowska Paulina, Denc Joanna, Konieczny Grzegorz (Poland)</p>
	<p style="text-align: center;">Comparison of selected physical fitness parameters in individuals with disabilities practicing Frame Running before and after a 12-week training period Maciejewska Martyna (Poland)</p>
15:10 - 15:20	PUBLIC VOTING: BEST STUDENT PRESENTATION AND POSTER
15:20 - 15:30	COMMITTEE MEETING
15:30 - 16:00	SUMMARY OF THE CONFERENCE AND AWARD CEREMONY

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Comparison of foot arch structure and balance in karate-training and non-training children aged 8–11 years.

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Keywords: karate, balance, foot arch, children, physical activity

Introduction: The development of the musculoskeletal system in early school-aged children depends, among other factors, on the level of physical activity. A particularly important role in the proper functioning of the musculoskeletal system is played by the foot and its arch structure, as well as the ability to maintain balance, which determine proper postural control and locomotion. Foot arch abnormalities and reduced balance abilities are common problems in the pediatric population.

Material and methods: The study included 72 children aged 8-11 years, including 31 boys and 41 girls. The karate group consisted of 31 children, while the non-training group included 41 children. Foot arch structure was assessed using a 2D podoscanner by analyzing Clarke's angle and the Wejsflog index. Static balance was assessed using the Flamingo Balance Test and the Tandem Stance Test, while dynamic balance was evaluated using the Tandem Walk Test and the Y-Balance Test. Sex, BMI, and training experience were also taken into account.

Results: No significant differences in foot arch structure were found between the groups ($p>0.05$); however, normal foot arch according to Clarke's angle was more frequently observed in children practicing karate (80.6% vs 61.0% for the left foot and 77.4% vs 46.3% for the right foot). Children practicing karate achieved better results in both static and dynamic balance tests. In the Tandem Stance Test, 96.8% of karate practitioners and 63.4% of non-training children completed the test without errors ($p<0.05$). In the Flamingo Test, karate practitioners made fewer errors and maintained balance for a longer time ($p<0.05$). In the Y-Balance Test, they achieved higher scores for both lower limbs. No significant differences were found between sexes or between the right and left lower limbs. Higher BMI values were associated with poorer dynamic balance parameters and greater foot width, while longer training experience correlated with better balance performance ($p<0.05$).

Conclusions: Regular physical activity, including karate training, may support the development of balance abilities in children and promote proper foot arch formation. Foot arch structure was not significantly associated with balance level, whereas excessive body weight may negatively affect postural control.

Balance and Coordination as a Tool to Activate Executive Functions

Blomniece Jurāne Baiba

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Keywords: executive functions; balance boards; movement-based learning; coordination; cognitive activity

Introduction: This workshop introduces the Barboleta balance boards as a practical tool for supporting children's executive functions through movement, balance and coordinated cognitive activity. The theoretical part will explore why executive functions are essential for a child's development, learning and self-regulation. Participants will gain an understanding of how balance, coordination and purposeful movement can support attention, working memory, self-control, information processing speed, planning, and the understanding of time and pace. The workshop will also highlight in which school subjects and everyday life situations executive functions are needed — for example, in reading, mathematics, language learning, problem-solving, following instructions, managing emotions, waiting, organising tasks, and adapting to change.

Material and methods: During the practical part, participants will have the opportunity to try the Barboleta balance platforms together with structured learning tasks. These activities demonstrate how cognitive processes can be activated through movement-based exercises and how the method can be adapted to different educational and developmental goals.

Results: The workshop demonstrates how balance, coordination and purposeful movement can support executive functions, including attention, working memory, self-control, planning and information processing speed. Practical activities show how cognitive processes may be activated through movement-based exercises.

Conclusions: Participants will leave with a clearer understanding of how balance and coordination can become a meaningful bridge between body, brain and learning.

Physical foundations for learning. Why neuromotor maturity matters. A review of studies carried out in the UK and Europe between 2005 and 2025.

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Keywords: Neuromotor skills; primitive reflexes; developmental maturity; school readiness

Introduction: A screening test designed to assess the neuromotor skills of children from seven years of age has indicated that a significant percentage of children enter formal education in the UK with immature neuromotor skills and that there is a correlation between less mature neuromotor skills and increased risk of educational under-achievement. Results from use of a developmental movement programme into the school day has shown that in many cases neuromotor skills can be improved enabling children who were previously under-performing on physical measures to start from a level playing field. This short presentation will review studies to date that have examined the incidence of neuromotor skills in mainstream primary schools and the impact of

Material and methods: An overview of research carried out in the last twenty year investigating the incidence of immature neuromotor skills in children of pre-school and school age; the impact of immature neuromotor status on educational achievement and the influence of daily movement programmes on neuromotor status.

Screening test: Assessing Neuromotor Readiness for Learning (2012; 2025)

Results: Signs of neuromotor immaturity are present in a significant percentage of the samples; children with immature neuromotor skills performed less well on educational measures; measures of neuromotor maturity improved more in experimental groups; there was a trend in which children with immature neuromotor skills *and* signs of educational under-achievement at the outset showed greater improvement on educational measures than control or comparison groups.

Conclusions: Evaluation of intervention programmes indicated that specific developmental movement programmes can help to reduce signs of neuromotor immaturity improving the physical basis for motor related aspects of classroom learning and poverty related differences in physical literacy skills.

Zoom on the Infant – Why, When and How to Assess Infants Using Standardized Diagnostic Tools in the First Year of Life

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Keywords: infant assessment, neurodevelopment, standardized tools, BabyZoom

Introduction: Early neurodevelopmental assessment is essential despite advances in imaging. Many neurological or genetic conditions are still diagnosed late, when functional limitations are already evident. Missed opportunities for early intervention increase the risk of longterm disability and reduced independence. There is a need for precise, evidencebased tools applicable in the first months of life.

Material and methods: The presentation introduces a multidimensional diagnostic approach using standardized tools such as the Prechtl General Movements Assessment, HINE, TIMP, NBAS, and the Munich Functional Developmental Diagnostics. The BabyZoom concept combines these scales into a complementary algorithm supporting evaluation of motor repertoire, posture, reflexes, and functional skills in infants under one year. goals.

Results: Integrating evidencebased scales enables the early identification of infants at risk for abnormal development, even before five months of age. The complementary nature of the tools improves diagnostic accuracy and supports targeted physiotherapeutic planning. Clinical examples demonstrate practical application in everyday work with infants.

Conclusions: A structured, multitool approach in the first year of life provides a reliable framework for early neurodevelopmental assessment. BabyZoom shows that combining standardized diagnostic tools enhances detection of atypical development and enables timely, effective intervention.

The Impact of Dietary Habits and Physical Activity on Oxidative Status in Pediatric Patients after Hematopoietic Stem Cell Transplantation

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Keywords: hematopoietic stem cell transplantation, oxidative stress, pediatric patients, nutrition

Introduction: Children after hematopoietic stem cell transplantation (HSCT) are particularly vulnerable to nutritional disorders and oxidative stress. The aim of this study was to assess the relationship between diet, physical activity, and oxidative stress parameters in this group.

Material and methods: The study included 509 pediatric patients at least one year after HSCT (317 boys, 192 girls; mean age 13 years). Physical activity was assessed using the IPAQ questionnaire. Dietary intake was evaluated based on 3-day dietary records, FFQ questionnaires, and Dieta 6.0 software. Oxidative stress parameters (TAS, TOS, OSI) and the Dietary Inflammatory Index (DII) were also analyzed.

Results: A positive correlation was found between physical activity level and TAS values. Negative correlations were observed between TAS and vitamin A and zinc intake, as well as between TOS and copper and zinc intake. No significant associations were found between OSI values and dietary parameters or physical activity level.

Conclusions: Higher physical activity may improve antioxidant potential in pediatric patients after HSCT, while nutrition appears to have a complex influence on oxidative stress balance in this group.

Assessment of the Impact of Postural Control on Static and Dynamic Balance in Children with Autism Spectrum Disorder and Attention-Deficit/Hyperactivity Disorder (ADHD) Using Clinical Observation and the Southern California Sensory Integration Tests

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Keywords. static and dynamic balance, postural control, children with autism spectrum and ADHD

Introduction. Children and adolescents with Autism Spectrum Disorder (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD) frequently present with motor impairments, particularly in the areas of postural control, motor coordination, and static and dynamic balance. These difficulties may negatively affect their level of independence, participation in everyday activities, school functioning, and social interactions. Children with ASD often demonstrate impairments in motor planning, balance reactions, and sensory modulation, whereas children with ADHD commonly exhibit difficulties related to postural stability, motor control, and sustaining attention during motor task performance.

Material and methods. A total of 28 children with ASD and 37 children with ADHD participated in the study. Postural control, as well as static and dynamic balance, were assessed using Clinical Observation and the Southern California Sensory Integration Tests by Ayres. All children attended sensory integration therapy at the Creator Rehabilitation Center. The obtained results were statistically analyzed.

Results. No statistically significant relationship was found between postural control and static or dynamic balance when comparing children with ADHD and ASD. However, postural control significantly influenced static balance in girls with ADHD ($p = 0.019$).

Conclusions. No significant relationship was found between postural control and static or dynamic balance in the overall ASD and ADHD groups. A significant strong negative correlation between postural control and static balance was observed only in girls with ADHD ($R = -0.69$; $p = 0.019$). The findings suggest that postural control and balance may represent relatively independent aspects of motor functioning in children with ASD and ADHD, although their interaction may be influenced by sex and individual developmental characteristics. Further studies on larger samples are needed to clarify the influence of sex and diagnosis on the relationship between postural control and balance.

Relational Rehabilitation in Children: Moving Beyond Strength to Restore Safety, Agency, and Movement

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Keywords: ICF, Active rehabilitation, wheelchair, paediatric rehabilitation

Introduction: The Active Rehabilitation Camp, utilizing wheelchair-using instructors as role models, provides a valuable complement to traditional rehabilitation. Aim of the study is the main aim of the study was to assess the impact of the AR Camp intervention on independence, physical fitness and the development of psychosocial skills in children who use wheelchairs.

Material and methods: A prospective, observational study involved 29 participants (18 boys, 11 girls) aged between 7 and 15. The most common conditions among the participants were: meningomyelocele (37%), cerebral palsy (27%), spinal muscular atrophy (13%) and Duchenne muscular dystrophy (7%). The participants were assessed on the first and last days of the camp using fitness tests (slalom, ball throws, sprint, 6-minute 'figure-of-eight' test) and the International Classification of Functioning, Disability and Health (ICF). Statistical analysis was performed with a significance level of $p < 0.05$.

Results: A statistically significant improvement was observed in cardiorespiratory fitness and wheelchair manoeuvring skills. No significant increase in muscle strength was observed. In the ICF assessment, a significant improvement was demonstrated in locomotion and activities of daily living, which correlated with a reduction in perceived stress. No significant differences were found based on gender, medical condition or type of wheelchair. The only variable with an impact on the results was the length of time spent in a wheelchair – children who had been using a wheelchair for the longest period made less progress.

Conclusions: The AR camps improve mobility and fitness and reduce stress. However, building greater muscle strength requires longer training. Imitating instructors and peer support helps children overcome their barriers, thereby increasing their independence. Furthermore, the individualised approach allows beginners in the AR system to acquire new skills and older children to refine their existing ones.

Prefrontal Cortex Hemodynamic Changes After 19 Weeks of Neurodevelopmental Physiotherapy in an Eight-Year-Old Child with Central Nervous System Immaturity: A Case Study

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Keywords: Prefrontal cortex (PFC) haemodynamics, neurodevelopmental delay, cognition, primitive reflexes (PR), balance control

Introduction. Haemodynamic response in prefrontal cortex during

Material and methods: The study included an eight-year-old boy diagnosed with neurodevelopmental delay associated with persistent primitive reflex activity. The patient underwent Individualised Neurodevelopmental Therapy (INT), aimed at reducing primitive reflex activity and improving balance and coordination, with additional exercises targeting normalization of muscle tone. Physiotherapy sessions were conducted once weekly for 19 weeks. Owing to low patient engagement, no concurrent interventions, home exercise programme, or additional sports activities were introduced during the study period. Assessments were performed at baseline and after completion of the 19-week intervention, during the 20th therapeutic visit. Primitive reflex activity, balance control, and mathematical skills were evaluated. Prefrontal cortex haemodynamics during cognitive, balance, and physical tasks were measured using the INVOS™ 7100 system (Medtronic).

Results: In the first examination, regional cerebral oxygen saturation (rSO₂) was 73.56% in the left part of the PFC and 73.26% in the right. After treatment, rSO₂ was 70.56% in the left PFC and 75.04% in the right PFC. The initial assessment of the results of the mathematical task was 23%. After therapy, the child achieved 30% in the maths test. The PR level was 2.44 in the first evaluation and 0.89 in the second. The most visible change was in ATNR, TLR and STNR.

The ability to remain still during the counting task improved, with no mistakes being made.

Conclusions: Individualized neurodevelopmental physiotherapy may influence prefrontal cortex activity, as reflected by higher rSO₂ in the right prefrontal region. However, findings from a single case cannot be generalized, and larger studies are required to confirm associated brain haemodynamic changes.

Using movement to support Primitive Reflex Integration

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Keywords: Primitive reflexes, movement and music, early childhood, brain development,

Introduction: Children's primitive reflexes typically integrate within the first twelve months of life. If this process is interrupted through maternal or environmental stress, developmental immaturities can occur, leading to educational challenges for children. Research (Hickey & Feldhacker, 2022; Pecuch et al., 2021) indicates that approximately 80% of children still have some level of retained reflexes when they arrive at school, and 34% have medium to high levels. These children often have motor and learning immaturities which impact their learning. Early childhood is the best place to support reflex integration through a range of 'soft' interventions that are easy to implement across settings. Music and movement are key elements in children's neurological development, and through fun, playful ways, skills can be developed and primitive reflexes integrated.

Material and methods: Along with some theory to support an understanding of the issues some children encounter, this session includes practical, take-home rhythm-based movements (5 Minute Moves) and activities.

Results: A study relating to the efficacy of the 5 Minute Moves is in development. This will be described in the session.

Conclusions: Teachers and parents are looking for simple ways to support brain development. Using music and targeted movements has been shown to be effective.

Assessment of physical fitness of children aged 7-15 training karate

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Keywords: Physical fitness, Karate, Children, Eurofit

Introduction: Karate training requires a high level of physical fitness, including coordination, flexibility, strength, speed, balance and endurance. Physical fitness is influenced by factors such as age, sex, body composition, and lifestyle; moreover, in ontogenesis, it represents a key determinant of the rate of development of somatic characteristics in children. Therefore, the aim of the study was to compare the physical fitness of children aged 7–15 who practise karate with population norms.

Material and methods: The study group consisted of 65 children aged 7–15 years (29 girls and 36 boys) who had been practising karate for at least six months. The international Eurofit physical fitness test was used to assess their physical performance.

Results: In both groups, the highest results were observed in the jumping test, with a mean percentile of 81% for boys and 93% for girls. In all performed tests, girls achieved better results than boys. Percentile analysis showed that boys exceeded the 50th percentile in flexibility and jumping tests and girls achieved values above the 50th percentile in all tests.

Conclusions: The research indicated that children practicing karate demonstrate higher levels of flexibility and jumping ability compared to their non-training peers. Moreover, the results obtained by girls suggest a more advanced development of motor abilities associated with karate training.

Idiopathic(?) Scoliosis - Dura Mater perspective

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Keywords: idiopathic scoliosis; Dura Mater; bipedalism; manual therapy; rehabilitation

Introduction: The central focus of the lecture is what current research tells us about idiopathic scoliosis — and in particular, the role of the Dura Mater in its development. Over the years, researchers have investigated countless intrinsic and extrinsic factors in search of a definitive aetiology, yet none has led to a conclusive answer. The only widely accepted elements remain genetic predisposition and the striking fact that idiopathic scoliosis occurs exclusively in humans. Several animal models have been used in attempts to replicate the idiopathic spinal curvature, and a similar pattern could only be recreated when the animal was forced into an upright position.

Material and methods: Going beyond traditional models, participants will explore exactly these questions, examining how Dura Mater mechanics may be implicated in the development of idiopathic scoliosis and what the latest evidence says about manual therapy and rehabilitation as effective intervention strategies.

Results: Evolutionary analysis reveals something equally thought-provoking: while every element of the spinal column has undergone significant adaptation across species- vertebrae, muscles, ligaments — the Dura Mater has preserved its structure almost entirely throughout mammalian evolution.

Conclusions: Could the human upright stance place a unique mechanical demand on Dural function — one that, in specific circumstances, contributes to the onset and progression of idiopathic scoliosis?

Crouch Gait in Cerebral Palsy – Evidence of Physiotherapeutic Interventions and Perspectives of Vojta Therapy

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Keywords. cerebral palsy; crouch gait; Vojta therapy; postural control; physiotherapy

Introduction. The treatment of crouch gait often focuses in isolation on knee extension, yet rarely achieves sustainable functional success. This presentation reviews the evidence for various physiotherapeutic interventions and illustrates the scientific links between postural control and walking ability.

Material and methods. Using a case study (GMFCS III), the potential of Vojta therapy is presented within the context of improved participation.

Results. Research demonstrates that trunk stability correlates directly with the gait quality and mobility of patients.

Conclusions. It illustrates how targeted neural facilitation creates the foundation for increased gait safety and independence in everyday life.

The influence of a vegetarian diet–shaped gut microbiome on children's psychomotor development

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Keywords: gut microbiome, plant-based diet, psychomotor development, gut–brain axis

Introduction: The early-life gut microbiome plays a crucial role in neurodevelopment through immune, metabolic, and neurotransmitter-related pathways. Increasing adoption of plant-based diets among children raises questions regarding their effects on gut microbiota composition and subsequent cognitive and psychomotor development. The aim of this review was to present the current state of knowledge regarding the relationship between vegetarian and plant-based diets, gut microbiome composition, and neurodevelopmental outcomes in children.

Material and methods: A review of literature published between 2021 and 2026 was conducted using PubMed and Google Scholar. Peer-reviewed articles, systematic reviews, and clinical studies evaluating associations between plant-based diets, gut microbiome composition, and neurodevelopmental outcomes in pediatric populations were included.

Results: Plant-based diets rich in dietary fiber were associated with increased abundance of beneficial short-chain fatty acid–producing bacteria, including *Roseburia*, *Faecalibacterium prausnitzii*, and members of the *Ruminococcaceae* and *Lachnospiraceae* families. Increased prevalence of *Bifidobacterium* and *Lactobacillus* was linked to improved gut barrier integrity, immune regulation, and microbiota–gut–brain axis signaling. These microbial alterations may support serotonin- and GABA-related pathways involved in cognitive, emotional, and psychomotor development. However, restrictive or poorly balanced plant-based diets may increase the risk of deficiencies in vitamin B12, iron, DHA, and essential amino acids, potentially impairing neuronal maturation, myelination, and psychomotor development in children.

Conclusions: Well-balanced plant-based diets may support healthy gut microbiome composition and neurodevelopment in children, whereas poorly balanced restrictive diets may increase the risk of nutrient deficiencies and impaired psychomotor development.

The impact of dietary patterns on gut microbiome composition and clinical outcomes in children with type 1 diabetes

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Keywords: type 1 diabetes, gut microbiome, pediatric nutrition, dysbiosis, dietary fiber

Introduction: The gut microbiome plays a crucial role in the modulation of the immune system and the maintenance of the intestinal barrier integrity. In children with type 1 diabetes (T1D), significant gut dysbiosis is observed, characterized by a reduced abundance of butyrate-producing bacteria and lower microbial diversity. Recent studies suggest that dietary interventions may serve as a nonpharmacological tool to modulate the microbiota, potentially improving glycemic control and reducing systemic inflammation.

Material and methods: A review of scientific literature published between 2021 and 2026 was conducted, focusing on studies examining the relationship between dietary patterns (including fiber intake and ultraprocessed food consumption) and gut microbiome composition in children with T1D. Peer-reviewed articles, systematic reviews, and clinical studies indexed in major databases were analyzed.

Results: High intake of dietary fiber and resistant starch is positively correlated with increased Bifidobacterium and Lactobacillus abundance, which directly enhances the production of short-chain fatty acids (SCFAs). These metabolites strengthen the intestinal epithelial barrier and are associated with improved insulin sensitivity and lower HbA1c levels. Conversely, diets high in ultra-processed foods promote proinflammatory taxa like Bacteroides fragilis, which may exacerbate intestinal permeability, potentially accelerating islet autoimmunity in genetically predisposed children.

Conclusions: Dietary patterns significantly influence the gut microbial landscape and metabolic stability in pediatric T1D patients. Targeted nutritional interventions, particularly those increasing fiber consumption, can promote a "protective" microbiome profile that serves as a supportive therapeutic element. These findings emphasize the practical need for microbiome-oriented dietary counseling in clinical practice to personalize pediatric diabetes care and improve long-term metabolic health outcomes.

Hypercalcemia in a mother and newborn with a heterozygous pathogenic variant in the CYP24A1

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Keywords: Vitamin D, idiopathic infantile hypercalcemia, CYP24A1

Introduction: CYP24A1 encodes 24-hydroxylase, responsible for vitamin D inactivation. Autosomal recessive mutations in CYP24A1 cause idiopathic infantile hypercalcemia (with hypercalciuria, nephrolithiasis). Heterozygotes are usually asymptomatic or present mild phenotype. Pregnancy and neonatal period promote the manifestation of these disorders due to the physiological increase in 1,25(OH)₂D₃ during pregnancy. The aim of this study is to present a case of early childhood hypercalcemia associated with a CYP24A1 gene mutation and to evaluate its impact on the subsequent clinical course and the child's development. Additionally, the study highlights the importance of monitoring vitamin D levels in pregnant women and performing genetic testing in cases of suspected vitamin D hypersensitivity.

Material and methods: A retrospective analysis of clinical presentation, laboratory and imaging findings, as well as genetic testing results in both the mother and newborn was performed, and complemented by a review of the current literature on CYP24A1-related hypercalcemia.

Results: In the third trimester, the mother was diagnosed with PTH-independent hypercalcemia and toxic vitamin D levels despite discontinuation of supplementation (previously 2000 IU/day of vitamin D). Additionally treatment with calcium carbonate for heartburn. Ultrasound revealed nephrocalcinosis. The infant showed poor weight gain in the first month; on day 10 hypercalcemia, hyperphosphatemia, low PTH and normal vitamin D levels were found. Genetic testing confirmed heterozygous pathogenic CYP24A1 variant in both. The infant received only formula-derived vitamin D with monitoring of 25(OH)D and calcium.

Conclusions: Due to the frequent unawareness of vitamin D hypersensitivity, monitoring calcium levels during pregnancy is justified. Vitamin D hypersensitivity should prompt genetic testing to determine the cause of hypercalcemia. Management of the infant includes calcium restriction, cautious vitamin D use with monitoring and renal follow-up.

The tryVinci Project: Gamification of core and hip girdle exercises

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Keywords: Gamification, physical activity, sedentary lifestyle, digital technology, healthy lifestyle

Introduction: In the 21st century, we have countless ways to spend our free time. Unfortunately, the most popular and enjoyable activities among children and young people often include social media use and playing in virtual reality. These activities are associated with a lack of movement and spending long periods of time in a seated position. This world is so attractive and diverse that more and more children who become familiar with it grow dependent on it, while lack of physical activity becomes a natural state for them.

Material and methods: People who sit for long periods neglect the “natural frame and drive” — a term coined by the authors — of our body, meaning the spine supported by muscles, as well as the hips. We fall into a vicious circle in which a low level of mobility and general physical fitness discourages us from movement and encourages escape into the comfort zone created by virtual worlds. Neglecting physical activity makes it difficult to begin effective training. For example, when we decide to start running but do not have sufficiently strong deep core and postural muscles, we expose ourselves to overload and injuries. Training in a supine position, lying on the back, helps us “cheat” gravity and consciously strengthen the most important muscles, which help protect our joints while practicing various sports.

Results: The world of home exercise equipment is broad, and the idea of gamifying physical activity through technology is already known, with many manufacturers considering how to use it.

Conclusions: The tryVinci Project is an attempt to support education in physical culture among children and young people.

The INPP-Method – A neurodevelopmental approach to support neuromotor maturity in children

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Keywords: Neuromotor Immaturity, Movement Intervention, INPP-Method, Learning Difficulties, Behavior Abnormalities

Introduction: The INPP Method is a developmental neurophysiological approach aimed at supporting neuromotor maturity in children as a foundation for learning, behavior, and emotional regulation. In alignment with the congress theme “*Knowledge shaping the future of the youngest*”, this contribution highlights how early movement development reflects the functional integrity of the central nervous system and influences later cognitive and social outcomes.

Material and methods: The INPP Method is based on the understanding that unintegrated primary reflexes and immature postural control can interfere with a child’s ability to engage effectively with their environment. Through structured assessment and individualized movement programs, the approach seeks to facilitate the natural maturation processes of the nervous system.

Results: Particular attention is given to early identification of developmental delays and subtle neuromotor immaturities, which may not be immediately visible but can have long-term consequences for learning and participation. By addressing these foundational aspects at an early stage, the INPP Method contributes to preventative and supportive strategies in child development.

Conclusions: This presentation will explore the relevance of neuromotor readiness in the early years, discuss clinical observations, and consider how integrating developmental knowledge into practice can help shape healthier developmental trajectories for children.

High school students' knowledge of the structure and function of the spine, the role of physical activity, and the need to apply ergonomic principles in everyday life

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Keywords: the spine, prevention, physical activity, occupational ergonomics

Introduction: Based on numerous systematic reviews and meta-analyses, musculoskeletal pain is affecting people at increasingly younger age. One factor may be unergonomic postures during study, but also the fact that our world is now highly digitalized. Technological solutions intended to optimize our daily lives can have a negative impact on young people's health. Progressive musculoskeletal dysfunctions can ultimately accelerate the onset of degenerative changes. Hence the need to raise awareness among young people about the importance of regular physical activity and daily ergonomics.

Methods: The study included 200 high school students aged 15-20. The study was conducted using an author's survey and two standardized surveys: the Neck Disability Index (NDI) and the Oswestry Low Back Pain Disability Scale (OLBPDS), completed electronically by students across Poland.

Results: The surveys were completed by 139 surveys were completed by girls and 61 by boys. The pain, most severely affecting the cervical spine, the lumbar spine and lumbosacral junction was experienced by 58.5% of respondents. More than half of respondents (66,5%) exercise regularly in school physical education. A positive correlation was found between age and knowledge of spine structure and occupational ergonomics, while no correlation was found between age and awareness of proper ergonomic habits in daily life. Gender was not a factor in the knowledge of spine structure and the prevention of postural defects, nor was physical activity level.

Conclusions: Despite the increasing awareness of spine physiology and work ergonomics in children as they age, there is a lack of knowledge about habits in daily living and how to implement them during the day.

Comparison of selected physical fitness parameters in individuals with disabilities practicing Frame Running before and after a 12-week training period

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Keywords: Frame Running, physical fitness, locomotor disability, cerebral palsy, 6-Minute Frame Running Test.

Introduction: Frame Running is a form of physical activity using a three-wheeled running frame with trunk support, designed for individuals with locomotor and balance impairments. Growing interest in this discipline highlights the need to assess its effects on physical fitness.

Material and methods: Twelve individuals with disabilities practicing Frame Running participated in the study. Assessments before and after the training period included heart rate, blood pressure, Heart Rate Recovery (HRR), Systolic Blood Pressure Recovery (SBPR), distance covered during the 6-Minute Frame Running Test (6-MFRT), grip strength, knee flexor strength, and body circumferences. Statistical analysis included the paired Student's t-test and Wilcoxon signed-rank test.

Results: After 12 weeks, the distance covered during the 6-MFRT increased significantly (457,00–584,25 m; $p=0,012$). Left knee flexor strength improved by 0,6 kg ($p=0.008$). Significant increases were also found in the circumferences of the left thigh, arm, and forearm. No significant changes were observed in grip strength, most heart rate parameters, or resting blood pressure. SBPR increased significantly from 0,87 to 1,01 ($p=0,013$).

Conclusions: Regular Frame Running training may improve cardiorespiratory fitness and muscle strength in individuals with disabilities. Further studies with larger groups and control groups are needed.

Movement as a Driver of Central Nervous System Maturation in School-Aged Children: Feasibility Study of a School-Based Motor Programme

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Keywords: neuromotor development; motor programme; primitive reflexes; central nervous system maturation; school-based intervention

Introduction: The persistence of primitive reflexes beyond early childhood has been described as a marker of neuromotor immaturity, associated with motor, learning, and social difficulties. There is high heterogeneity in studies addressing movement-based programmes, and few have systematically explored their feasibility in school settings.

Material and methods: A feasibility study with a cluster-controlled quasi-experimental design and a cross-over component was conducted in a Catalan school (n = 51 children aged 7–9 years, two classroom groups). A structured daily motor programme (10–15 minutes, 5 days per week) was implemented over one academic year. Assessment included the integration of primitive reflexes, neuromotor skills, oculomotor function, and risk of dyslexia. Feasibility outcomes included adherence and completion of assessments.

Results: At baseline, all participants presented at least one retained reflex, and 84% showed two or more reflexes with a score ≥ 2 (INPP Clinical Assessment Tool). Changes were observed in neuromotor skills (particularly balance) and oculomotor function, while reading-related outcomes showed more variable patterns. Improvements in reflex measures were found in both groups. Programme adherence was high, with complete assessment in most participants.

Conclusions: The study supports the feasibility of implementing a motor programme in school settings. Findings reinforce the perspective of primitive reflexes as early neuromotor markers reflecting central nervous system organization. Further studies are needed to understand how motor interventions may contribute to neuromotor development and maturation.

The effect of Vojta therapy on autonomic nervous system activity in a newborn: a pilot observation using NIPE

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Keywords. parasympathetic nervous system, Vojta therapy, NIPE, infant, comfort

Introduction. The Vojta method is widely used in the neurodevelopmental therapy of newborns and infants. However, it often evokes intense emotional reactions, including crying, which raises concerns about potential pain and stress. Objective assessment of autonomic nervous system responses may help to better understand these reactions.

Material and methods. This pilot observation involved a single newborn undergoing Vojta therapy performed by a certified therapist. Autonomic nervous system activity was monitored using the NIPE (Newborn Infant Parasympathetic Evaluation) index, which reflects parasympathetic activity and changes in physiological comfort during stimulation.

Results. Baseline NIPE values at rest were recorded at 45. During Vojta stimulation, a decrease in NIPE values to an average of 43 was observed, indicating reduced parasympathetic activity and increased physiological arousal. After the end of stimulation, NIPE values returned to baseline within 46.

Conclusions. Observed changes in NIPE values suggest a transient autonomic response to stimulation rather than sustained dysregulation. Rapid return to baseline may indicate preserved physiological regulation mechanisms. Further studies on larger groups are required to better differentiate between stress-related and nociceptive responses during therapy.

Primitive Reflex Activity in Relation to Motor Skills in Healthy Preschool Children

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Keywords: preschool children; neuromotor maturity; physical development, primitive reflexes

Introduction: The presence of active primitive reflexes (APRs) in preschool and school-aged children indicates neuromotor immaturity. Studies show dependencies between the preserved activity of primary reflexes and developmental problems such as learning difficulties (problems with reading, writing, reduced mathematics skills, and dyslexia), difficulties with coordination, and attention deficit.

Material and methods: The primary purpose of this study is to present the activity of three tonic reflexes in a sample of 112 Polish children aged 4–6 in relation to their motor skills. The children were examined for the presence of the asymmetric tonic neck reflex (ATNR), symmetric tonic neck reflex (STNR), and tonic labyrinthine reflex (TLR). Motor performance was examined with the MOT 4–6. Statistical analysis shows an inverse correlation between the score in the test of reflexes and motor efficiency (MOT 4–6) at $p < 0.05$ (0.33).

Results: Children with increased reflex activity presented a lower level of motor efficiency. The multiple regression model showed that with the older age of the child and the decrease in the level of reflex activity, the motor skills of children improve.

Conclusions: Thus, there is a need for early screening of primitive reflexes in children. Properly selected exercises and therapeutic activities aimed at integrating APRs in children with developmental difficulties can improve their motor skills, perceptual abilities, and emotional behavior.

Early-Life Antibiotic Exposure as a Potential Risk Factor for Neurodevelopmental Disorders in Children

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Keywords: early-life antibiotic exposure, neurodevelopmental disorders, autism spectrum disorder, ADHD

Introduction: Antibiotics are commonly used during pregnancy and early childhood. In recent years, increasing attention has been paid to the potential impact of early-life antibiotic exposure on developmental processes, particularly nervous system development. Several studies suggest a possible association between antibiotic exposure during prenatal and early postnatal periods and an increased risk of neurodevelopmental disorders, including autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD). The aim of this study is to summarize current evidence on the relationship between early-life antibiotic exposure and the risk of neurodevelopmental disorders in children.

Material and methods: A narrative review of the literature was conducted using the PubMed, Scopus, and Web of Science databases. Cohort studies, case-control studies, and systematic reviews addressing antibiotic exposure during pregnancy and early childhood in relation to neurodevelopmental outcomes, particularly ASD and ADHD, were included in the analysis.

Results: Several observational studies reported higher rates of ASD and ADHD among children exposed to antibiotics during prenatal life or early childhood. The associations appeared stronger following repeated or prolonged antibiotic courses, suggesting a potential dose-response relationship. Proposed mechanisms include gut microbiota dysbiosis, immune dysregulation, and neuroinflammation affecting the microbiota-gut-brain axis. However, the observed associations may be influenced by confounding factors, including maternal infections, genetic susceptibility, and environmental exposures.

Conclusions: Current evidence suggests that early-life antibiotic exposure may represent an important environmental factor influencing neurodevelopment. Although causality has not been established, antibiotic-induced gut microbiota dysbiosis is increasingly recognized as a plausible mechanism linking antibiotic exposure with ASD and ADHD. These findings highlight the importance of rational antibiotic use during pregnancy and early childhood and support further investigation of the gut microbiota as a potential modifiable factor influencing neurodevelopment.

The impact of dance on the motor development of children aged 8– 10

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Keywords: dance, children, motor development

Introduction: Dance is a popular form of physical activity that combines elements of sport and recreation. Good motor coordination, balance, flexibility and adequate physical fitness are all skills required for dance. Regular participation in dance classes can support children's motor development and social skills. This study aimed to compare the motor skills of children aged 8–10 who train in dance with those of their peers who do not.

Materials and methods: The study was conducted with a group of 43 children aged 8–10. The test group comprised 21 dancers (3 boys and 18 girls), while the control group comprised 22 primary school pupils (3 boys and 19 girls). The results of fitness tests comprising 12 exercises (skip A, squats, jumping jacks, swallow, two-footed forward jump, plank, butterfly and bend) and the Ruffier test were analysed. A questionnaire on subjective opinions regarding physical activity was also included.

Results: The dancers achieved higher average scores than their peers in all fitness tests. In the Ruffier test, none of the dancers were classified as having poor fitness, while none of the pupils were classified as having very good fitness. When asked about their subjective opinions on physical activity, the dancers rated themselves as fitter than their peers. They find it easier to make new friends and experience less stress before public performances thanks to their participation in group classes. However, all respondents agreed on two questions: that their circle of friends expands thanks to group classes and that practising sport has an impact on physical fitness. A correlation was also observed between the time spent on physical activity and the ability to perform the tests.

Conclusions: Dance training has an overall positive effect on the physical fitness of children aged 8–10, and they are aware of the impact of physical activity on fitness.

A Child in a Flood of Feelings and Emotions (about books supporting the harmonious development of a child published in Poland in 2021-2024)

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Keywords: children's books, feelings, emotions.

Introduction: Books about feelings and emotions have become a permanent fixture on the Polish publishing market. Many Polish authors and illustrators create such editions. The paper shows this phenomenon using the example of Polish publishing production from 2021-2024 (125 editions).

Material and methods: The study was conducted using a quantitative (bibliographic) method, based on the National Library Catalogue. The method used was to analyze the publishing repertoire.

Results: Books about feelings and emotions are aimed primarily at the youngest reader. These are mostly picture books (75%), mostly by foreign authors (64%). Analysis of the topics covered in the books revealed over 80 different issues. They can be grouped into: 1) emotional states and character traits, 2) participants in communication processes, 3) actions, skills, attitudes, 4) accompanying phenomena (problems).

Conclusions: There is a constantly growing demand for this type of children's books and an expert opinion on their value and usefulness. Accurately recognizing feelings and being able to deal with them is timeless and has no age limit.

Childbirth – but what about the mother?

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Keywords: Caesarean section, postpartum period, scar, postpartum physiotherapy, maternal health

Introduction: The birth of a child is an event of great significance for the family. However, it should not be forgotten that the perinatal period is also associated with numerous changes occurring in a woman's body. One of the common obstetric interventions is a caesarean section, which leaves a scar that may cause complaints such as pain, tenderness, or hypersensitivity to stimuli. In some cases, this may also lead to functional limitations, including reduced tissue elasticity and impaired tissue mobility. Appropriate physiotherapeutic care for women after childbirth may support the mother's recovery process. The aim of the study was to assess changes in scar tenderness, elasticity, and pain intensity of the caesarean section scar during a one-month physiotherapeutic follow-up in the early postpartum period.

Material and methods: The study included 12 women – primiparas aged 26–35 years who gave birth by caesarean section. Each participant underwent two assessments. The first examination was conducted in the 2nd week postpartum, and the second in the 6th week postpartum. Both measurements were performed during home visits. Scar tenderness was assessed using the Pain Test FPX algometer, while scar elasticity and adhesion were evaluated using an adheremeter. Pain intensity was measured using the Visual Analogue Scale (VAS). During the four-week period between assessments, the participants received scar therapy including soft tissue techniques applied in the area surrounding the scar as well as directly on the scar.

Results: Changes in scar tenderness were analyzed using the Wilcoxon signed-rank test for dependent samples, comparing values before and after therapy. A statistically significant decrease in scar tenderness was observed. The same statistical test was used to assess elasticity, demonstrating a statistically significant increase in scar elasticity. In the analysis of changes in pain intensity assessed using the VAS scale, the Wilcoxon signed-rank test was also applied. The observed reduction in pain was statistically significant. The improvement was also clinically meaningful – in each participant, a decrease in pain intensity of at least 2 points on the VAS scale was recorded.

Conclusions: The results of this preliminary study indicate that physiotherapeutic treatment of caesarean section scars may bring beneficial effects, including reduced tenderness, increased tissue elasticity, and decreased pain intensity. These findings highlight the importance of comprehensive postpartum care for women, which – alongside care for the newborn – should also include support for the mother's physical recovery.

The Role of Parents in the Early Detection of Cerebral Palsy Using Prechtl's General Movements Assessment

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Keywords: Cerebral palsy, Prechtl's General Movements Assessment, parents

Introduction: Cerebral palsy is the most common cause of disability in early childhood. It occurs with a frequency of 2 to 3 per 1000 live births, affecting especially preterm infants. One of the non-invasive diagnostic tools is Prechtl's General Movements Assessment (GMA). It is a video-recording observational method with 95% sensitivity and 97% specificity, performed by specialists on infants under 5 months, focused on the absence of fidgety movements.

Material and methods: The literature search was conducted using PubMed and Google Scholar. The search focused on studies concerning early detection of cerebral palsy, Prechtl's General Movements Assessment, and the role of parents in the diagnostic process.

Results: Parents contribute to early diagnosis by recording spontaneous movements at home, providing clinicians with a broader perspective. However, high-risk infants' parents need psychological support and instructions. GMA clinical implementation remains limited due to reported barriers, including the requirement for training and expertise. Growing interest in technological solutions for remote GMA efficiency led to the development of applications to optimize parents' recordings and data collection.

Conclusions: Parents closely collaborate with specialists through home video recordings. They require structured guidance, which emerging technological developments are intended to provide.

The Impact of Gut Microbiota Modulation and Dietary Interventions on the Developmental Outcomes in Children with Autism Spectrum Disorder: A Review of Recent Clinical Advances

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Keywords: Autism Spectrum Disorder, Fecal Microbiota Transplantation, Pediatric Development.

Introduction: Autism Spectrum Disorder (ASD) is increasingly linked to gut microbiota dysbiosis through the gut-brain axis. Recent clinical research focuses on Fecal Microbiota Transplantation (FMT) and dietary interventions as strategies to improve both gastrointestinal health and core behavioral symptoms. This review synthesizes the current state of knowledge based on the evidence from 2025 and 2026 concerning the efficacy of these biological therapies. The objective is to determine how microbiome modulation influences neurodevelopmental outcomes and reduces systemic inflammation in pediatric patients.

Material and methods: A review across PubMed and databases was conducted, focusing on clinical trials and prospective observational studies published between 2025 and 2026. Data were synthesized from research utilizing standardized diagnostic tools, including the Social Responsiveness Scale (SRS-2), Childhood Autism Rating Scale (CARS), and Parent Global Impressions-Revised (PGI-R), to measure behavioral changes following microbiome-based therapies and specialized dietary protocols.

Results: Recent clinical data indicate that FMT using hydrogen nanobubble water was associated with a reduction in social impairment scores (averaging 29%) without the necessity of prior antibiotic treatment. Longitudinal studies suggested that improvements in both gastrointestinal health and social communication could be maintained for up to 18 months post-intervention. Furthermore, Washed Microbiota Transplantation (WMT) has emerged as a potentially safer alternative to traditional FMT, minimizing adverse effects while modulating the gut-brain axis. Dietary interventions focusing on tryptophan metabolites showed a correlation with reduced neuroinflammation and enhanced cognitive development milestones.

Conclusions: Studies suggest that microbiota modulation and specialized dietary management can be effective tools in the holistic therapy of ASD. These interventions could offer a promising path for enhancing neurodevelopmental progress and the quality of life in children.

When Is Distress More Than Developmental? Recognising Clinically Significant Anxiety, Depression and Risk in Young People

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Keywords: adolescents, anxiety, depression, interdisciplinary, suicide

Introduction: Emotional distress is common in adolescence and frequently presents within interdisciplinary health settings. Research in affective neuroscience, cognitive models of anxiety and depression, and suicide risk indicates that perceived threat, hopelessness and reduced coping confidence are associated with functional impairment and increased vulnerability. Differentiating normative developmental distress from clinically significant concern is an essential competence for non-mental health professionals.

Material and methods: A structured framework was developed through synthesis of research on threat processing, cognitive vulnerability and risk identification. Four clinical lenses: duration, intensity, functional impairment and risk are applied to observable behaviour in work with young people.

Results: The framework supports identification of anxiety-related themes (anticipated threat and reduced coping appraisal), depressive patterns (negative self-evaluation and hopelessness), and indicators of trauma-related overload and self-harm risk. Structured conversational responses and escalation pathways enhance clinician confidence in addressing sensitive concerns.

Conclusions: Early recognition of clinically significant distress within interdisciplinary settings may strengthen safeguarding and timely referral. Structured noticing and appropriate response represent core components of responsible developmental care.

Relational Rehabilitation in Children: Moving Beyond Strength to Restore Safety, Agency, and Movement

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Keywords: Therapeutic Alliance, Kinesiophobia, Motor Behaviour

Introduction: Many children presenting with movement difficulties are not limited primarily by strength, but by their relationship to movement. Research indicates that fear of movement (kinesiophobia) may be more predictive of altered motor behaviour than strength alone, suggesting that purely biomechanical approaches may be insufficient.

Material and methods: This workshop introduces the Relational Rehabilitation Model, a practical clinical framework that reframes adolescent rehabilitation as a relational and experiential process. It is presented as a five-stage sequence: Relationship (establishing safety), Meaning (connecting to what matters to the child), Awareness (developing body perception), Agency (building self-efficacy), and Flow (restoring confident, engaged movement).

Results: Through teaching and demonstration, participants will explore how shifting from a mechanical to a relational approach can enhance therapeutic alliance, reduce fear, and improve movement outcomes in children.

Conclusions: The workshop introduces the Relational Rehabilitation Model as a practical clinical framework that reframes adolescent rehabilitation as a relational and experiential process.

From Discovery to Diagnosis: Genotype-Phenotype Correlations in Polish Patients with the Newly Identified ReNU Syndrome

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Keywords: ReNU Syndrome, RNU4-2 gene, rare diseases, genotype-phenotype correlations

Introduction: ReNU syndrome, described in 2024, is a newly identified neurodevelopmental disorder caused by pathogenic variants in the RNU4-2 gene. Current estimates suggest that RNU4-2 variants may account for approximately 1 in 250 cases of neurodevelopmental disorders worldwide. Despite increasing recognition, the phenotypic spectrum remains incompletely characterized.

Material and methods: Eleven patients with molecularly confirmed ReNU syndrome were included in the genotype–phenotype correlation analysis. Phenotypic assessment was performed using an original clinical questionnaire. Due to the clinical overlap with Pitt–Hopkins syndrome (PTHS), a comparative analysis of both syndromes was conducted.

Results: The study expands the clinical characterization of ReNU syndrome and correlates phenotypic findings with molecular data and previous reports. The absence of hyperventilation and apnea appeared to be the most important feature distinguishing ReNU syndrome from PTHS. Osteoporosis was identified in two patients. Patients carrying milder variants showed less severe developmental impairment, further broadening the phenotypic spectrum.

Conclusions: Detailed phenotypic assessment may improve targeted genetic diagnostics and differential diagnosis between ReNU syndrome and PTHS, potentially shortening diagnostic pathways.

Modern management of adolescent idiopathic scoliosis: more can be better - combining therapies for improved outcomes

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Keywords: Idiopathic scoliosis, Physiotherapy Scoliosis Specific Exercises, physiotherapy management of scoliosis

Introduction: Adolescent idiopathic scoliosis (AIS) is the most common type of this three-dimensional multifactorial structural deformity of the spine. Since the publication of the 2016 SOSORT guidelines, the application of Physiotherapy Specific Scoliosis Exercises (PSSE) in the treatment of AIS has received considerable attention. There is some evidence that incorporating additional modalities could improve therapy outcomes. Which methods are effective?

Material and methods: This narrative review examined peer-reviewed literature from 2016 to 2026, including systematic reviews, protocols, and primary studies that investigated the types of physiotherapy management of AIS.

Results: Modalities investigated in primary studies included sensory integration training (SI), proprioceptive neuromuscular facilitation (PNF), dynamic neuromuscular stabilization (DNS), manual therapy, myofascial release, whole-body vibration, and core stabilization training. Most of these interventions were effective when combined with PSSE.

Conclusions: A combination of PSSE and additional modalities as an integrated therapeutic strategy in AIS is effective; however, treatment options should be tailored to the patient's individual characteristics.