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Sensory-motor deficits in children with developmental coordination disorder, attention deficit hyperactivity disorder and autistic disorder

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Abstract

Children who have been diagnosed with any one developmental disorder are very likely to meet diagnostic criteria for some other developmental disorder. Although comorbidity has long been acknowledged in childhood disorders, little is understood about the mechanisms that are responsible for the high level of comorbidity. In a series of studies, we have investigated the link between sensory-motor deficits and developmental disorders. Poor sensory-motor integration has long been implicated as a cause of motor problems in developmental disorders such as developmental coordination disorder (DCD), and our recent research has also investigated sensory-motor deficits in children with attention deficit hyperactivity disorder (ADHD) and autistic disorder. Based on a critical examination of relevant literature and some of our recent research findings, we argue that the importance of poor sensory-motor functioning in discriminating children with different disorders has been underestimated. Poor sensory-motor coordination appears to be linked to DCD, but not ADHD. Also, sensory-motor deficits in children with DCD and autistic disorder may provide insight into some of the social difficulties found in these groups of children. This research will increase our understanding of why children with one developmental disorder typically also have problems in other areas.

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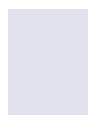


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... ASD is distinguished by neurocognitive deficits that hinder speech and social interaction, as well as confined and repetitive behaviors (Worley et al., 2012). Furthermore, people with autism frequently have sensory processing issues, making it difficult for them to adequately respond to and interpret sensory cues (Kern et al., 2011; Piek et al., 2004)

... Utilizing a trampoline, for instance, within the program offers such advantages given the playful nature of the task (Lourenço et al., 2015; Phytanza, Purwanta, et al., 2021) . More specifically, trampoline use throughout the programme has been linked to enhancements in the children's stability as well as physical abilities, control of posture, as well as power (Apoloni et al., 2013;Giagazoglou et al., 2015). ...

Is There an Effect of the Trampoline Program for Autism Spectrum Disorder Children in Portugal?

[Article](#)

Mar 2024

● Carla Lourenço · ● Erick Burhaein · ● Diajeng Tyas pinru Phytanza · Eduarda Coelho

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... Evidence from neurobiological and behavioral research demonstrates a close interplay among sensory, motor, cognitive, and emotional functioning in children (Davis et al., 2009;Diamond, 2000;Hadders-Algra, 2016;Mancini et al., 2018). For example, deficits in sensorimotor functioning are a core feature across different developmental conditions (Fournier et al., 2010; Piek & Dyck, 2004; Shum & Pang, 2009) and have been linked to attentional difficulties (Hazen et al., 2014;Koncarova et al., 2014), lower cognitive abilities (Davis et al., 2009;Piek & Dyck, 2004), poorer academic performance (Davis et al., 2009;Macdonald et al., 2018), and atypical brain functional connectivity (Kim et al., 2017;McLeod et al., 2014). A large body of research shows that functional outcomes and brain connectivity can be positively altered by training and practice over time (Bediou et al., 2018;Klingberg et al., 2005;Oei & Patterson, 2013;Posner et al., 2015;Qian et al., 2018;Sánchez-Pérez et al., 2019;Tang et al., 2007;Thorell et al., 2009) -including by sensorimotor exercises, computer-based training, and repetition of specific tasks -as well as by a variety of behavioral therapies, and lifestyle interventions related to nutrition and physical activity (Alderman et al., 2017;Christiansen et al., 2019;Esteban-Cornejo et al., 2021;Jirout et al., 2019). ...

... Evidence from neurobiological and behavioral research demonstrates a close interplay among sensory, motor, cognitive, and emotional functioning in children (Davis et al., 2009;Diamond, 2000;Hadders-Algra, 2016;Mancini et al., 2018). For example, deficits in sensorimotor functioning are a core feature across different developmental conditions (Fournier et al., 2010;Piek & Dyck, 2004;Shum & Pang, 2009) and have been linked to attentional difficulties (Hazen et al., 2014;Koncarova et al., 2014), lower cognitive abilities (Davis et al., 2009; Piek & Dyck, 2004) , poorer academic performance (Davis et al., 2009;Macdonald et al., 2018), and atypical brain functional connectivity (Kim et al., 2017;McLeod et al., 2014). A large body of research shows that functional outcomes and brain connectivity can be positively altered by training and practice over time (Bediou et al., 2018;Klingberg et al., 2005;Oei & Patterson, 2013;Posner et al., 2015;Qian et al., 2018;Sánchez-Pérez et al., 2019;Tang et al., 2007;Thorell et al., 2009) -including by sensorimotor exercises, computer-based training, and repetition of specific tasks -as well as by a variety of behavioral therapies, and lifestyle interventions related to nutrition and physical activity (Alderman et al., 2017;Christiansen et al., 2019;Esteban-Cornejo et al., 2021;Jirout et al., 2019). ...

Measurement properties of the Brain Balance® multidomain developmental survey: validated factor structure, internal reliability, and measurement

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Jan 2023 · CURR PSYCHOL

● Rebecca Jackson · Joshua T. Jordan

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... In addition, sensory processing patterns have been established which categorize behavioral responses to sensory stimuli [12]. Impairments in sensory processing have been identified in children with various neurodevelopmental disorders including attention hyperactivity deficit disorder (ADHD) [2,13,14], ASD [9], Williams Syndrome [15], and preterm infants [16], with several investigators focusing on the identification of the sensory processing differences between clinical populations [17][18] [19] [20]. ...

... There were no group differences in empathic processing except in children with ASD showing higher personal distress than TD peers. This is contrary to prior evidence showing that children with ASD and those with poor motor abilities have less cognitive and/or emotional empathy [19, 81,128]. In our studies, we used a self-reported measure of empathy (IRI) compared to parent-reported measures utilized in other studies [81], which may indicate that children are more empathetic than their parents report. ...

Sensory Modulation in Children with Developmental Coordination Disorder Compared to Autism Spectrum Disorder and Typically Developing Children

[Article](#) [Full-text available](#)

Aug 2022 · BSRCCS

● Sofronia Ringold · Riley W McGuire · ● Aditya Jayashankar · ● Lisa Sarah Aziz-Zadeh

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... Furthermore, studies have reported deficits in motor skills, such as hypotonia (low muscle tone) and apraxia (difficulty to execute a planned physical movement) (Ming et al., 2007;Wigham et al., 2015;Hannant et al., 2016). Even more, studies have also reported slower repetitive hand and foot movements, slower and inaccurate manual dexterity, poorer ball throwing skills and reduced coordination of locomotor skills, such as jumping and running (Piek & Dyck, 2004; Green et al., 2009;Haswell et al., 2009;Hannant et al., 2016). Fournier et al., (2010) conducted a metaanalysis with 51 comparisons of motor ability and found that participants with ASD displayed a pronounced motor and sensory impairments compared to typically developing counterparts, with almost 98 percent of the autism sample reporting two or more sensory-motor issues (Fournier et al., 2010). ...

... The findings from all the research mentioned above indicates that children and adults with autism have a difficulty incorporating sensory inputs, particularly visual inputs, into motor learning and show difficulty coordinating visual and motor movements. Therefore, these difficulties could particularly impact social learning which is learnt through imitation and integration of eye movements with gestures during social communication, thus, resulting in social and non-social deficits often reported in autism spectrum disorders (Piek & Dyck, 2004; Happé & Frith, 2006;Tager-Flusberg, 2008;Iarocci et al., 2010;Cossu et al., 2012). ...

An investigation of sensory integration across the autistic spectrum using multisensory illusions

[Article](#)

Feb 2022

Salik Masood

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... The above-mentioned results allow for professionals to design and evaluate the intervention programs aimed to improve procedures for overcoming specific deficits identified in children born preterm [34, 35]. For example, the educators may design a program focused on improving the perceptive skills such as strengthening body image and body self-esteem, practicing visual-motor coordination exercises, or creating activities that promote social interaction of premature children. ...

... For this reason, it becomes essential to strengthen educational programs in the field of emotional control in order to improve the overall development of children born preterm. Deficiencies in emotional control and in general in all social aspects may be related to their motor immaturity and deficiency in body perception [34]. Another explanation is that premature children suffer various processes at birth depending on their medical condition, the degree of immaturity, and early separation from the mother (for short or very long periods), wherein anxiety states may occur [1]. ...

Physical, Perceptual, Socio-Relational, and Affective Skills of Five-Year-Old Children Born Preterm and Full-Term According to Their Body Mass Index

[Article](#) [Full-text available](#)

Apr 2021

● Pedro Gil Madrona · ● Sonia J. Romero Martínez · ● Carmen Roz Faraco · Gavin Pereira

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... 2,8,9 Therapy for autistic children typically focuses on developing social and communication skills, as well as managing sensory processing differences. 10, 11 Despite the high prevalence of motor impairments in autistic children, motor concerns are not typically the primary target of therapy for these children. 2 Current best-practice to improve motor function in children with DCD includes a treatment approach called Cognitive Orientation to daily Occupational Performance (CO-OP). 12 CO-OP is a task-specific approach designed to improve motor-based skills that a child needs or wants to master; it is a cognitive-based, problem-solving approach that uses verbal mediation and identifies strategies to support skill acquisition. ...

Effectiveness of Cognitive Orientation to daily Occupational Performance for autistic children with developmental coordination disorder

Article [Full-text available](#)

Aug 2024 · [DEV MED CHILD NEUROL](#)

Melika Kangarani-Farahani ·  Sandra Thompson-Hodgetts ·  Jill Zwicker

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... Bununla birlikte, GKB'li çocuklar cevap verme ve değerlendirme süreçlerinde daha az çaba harcamaktadır ve yanlışları düzeltme de daha az nöral kaynağı devreye sokmaktadır [17]. Ek olarak, GKB bulunan çocuklarda sıklıkla görülen zayıf duyu-motor entegrasyonunun beyin aktivitesindeki farklılıklarla ilişkili olabileceği düşünülmektedir [21]. Mannini vd. ...

Elektroensefalografi (EEG) sinyallerinin güç spektral yoğunlukları kullanılarak gelişimsel koordinasyon bozukluğunun derin öğrenme modeli ile otomatik

Article

Mar 2024

Hanife Göker

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... And although ASD is regarded as a mental disorder, dysfunctions of other internal organs and systems may also be associated with ASD. Such features include, in particular, sensory abnormalities [Kern et al., 2006], sensory-motor deficits [Piek and Dyck, 2004], problems with fine and gross motor skills [Provost et al., 2007], movement disorders/motor skills [Green et al., 2009], balance problems [Minshew et al., 2004], muscle weakness [Hardan et al., 2003], and hypotonia [Ming et al., 2007]. ...

Disorders of Motor Activity in a Model of Autism Spectrum Disorders

Article

May 2024 · [Neurosci Behav Physiol](#)

 Maxim Baltin ·  A. E. Khairullin · D. V. Efimova · D. V. Ivanova

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... И хотя РАС считается психическим расстройством, с ним могут быть связаны и расстройства функций других внутренних органов и систем. К таким особенностям относятся, в частности, сенсорные аномалии (Kern et al., 2006), сенсорно-моторные дефициты (Piek, Dyck, 2004), проблемы с мелкой и грубой моторикой (Provost et al., 2007), нарушения в движении/моторных навыках (Green et al., 2009), проблемы с равновесием (Minshew et al., 2004), мышечная слабость (Hardan et al., 2003) и гипотония (Ming et al., 2007). ...

DISORDERS OF MOTOR ACTIVITY ON THE MODEL OF AUTISM SPECTRUM DISORDERS

Article

Nov 2023 · [ZH VYSSH NERV DEYAT+](#)

 A. E. Khairullin · D. V. Efimova · D. V. Ivanova ·  Ayrat Ziganshin

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... Based on a wide variety of criteria and measures, SPD is commonly associated with other conditions, including co-occurrence in up to 70% of children with autism spectrum (ASD), anxiety, attention deficit/hyperactivity (ADHD), and developmental coordination disorders [1],[7][8][9][10][11][12][13]. While sensory processing differences, particularly those related to auditory and visual discrimination, have been recognized and studied in the context of autism for decades, the importance of sensory over-responsivity (SOR), a component of SPD, has only recently gained widespread neuroscience and community attention [14][15][16][17][18]. SOR is characterized by extreme negative reactions to innocuous, common sensory experiences and is frequently reported in the auditory and tactile domains, therefore making these domains an excellent starting point for exploration of neural mechanisms which can then be expanded to visual, gustatory/olfactory, vestibular, and proprioception domains. ...

White matter microstructure of children with sensory over-responsivity is associated with affective behavior

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Jan 2024 · J NEURODEV DISORD

Jamie Wren-Jarvis · Rachel Powers · Maia Lazerwitz ·  Pratik Mukherjee

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... The symptoms impact on cognitive, educational, behavioral, and emotional functioning [1]. Children with ADHD also exhibit problems with motor coordination, balance, and somatosensory functions outside the primary clinical area [2][3][4]. ...

The effect of methylphenidate on pain perception thresholds in children with attention deficit hyperactivity disorder

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Oct 2023 · Child Adolesc Psychiatr Ment Health

 Abdullah Bozkurt · Selin Balta

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... Σύμφωνα με τη βιβλιογραφία, τα άτομα με ΔΑΦ εμφανίζουν χαμηλά επίπεδα φυσικής κατάστασης, καθώς και ελλείμματα στην αισθητηριο-κινητική τους ανάπτυξη (Piek & Dyck, 2004), στην αδρή (Emck, Bosscher, Beek & Doreleijers, 2009) και λεπτή κινητικότητα (Provost, Heimerl & Lopez, 2007), στον οπτικοκινητικό συντονισμό (Fournier, Hass, Naik, Lodha & Cauraugh, 2010) και στην ισορροπία (Stins & Emck, 2018). Ο έλεγχος της ισορροπίας έχει ενδιαφέρον από την άποψη της γνωστικής επιστήμης, καθώς περιλαμβάνει μια πολύπλοκη αλληλεπίδραση μεταξύ επεξεργασίας των πληροφοριών, του κινητικού σχεδιασμού, του συγχρονισμού και της αλληλουχίας των μύϊκών κινήσεων. ...

413-KOUTSOUKI-ASONITOU-CHARITOU-Cognitive-and-Motor-Development

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Aug 2023

 Dimitra Koutsouki ·  Katerina Asonitou ·  Sophia Charitou

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... From this short review, it seems that DCD and ASD motor impairments share some characteristics but might have distinct profiles, which was confirmed by several reviews focusing on the differences and similarities between the two populations (Caçola et al., 2017; Kilroy et al., 2019; Piek & Dyck, 2004). However, very few studies directly compared DCD and ASD groups of children on motor tasks. ...

Motor deficits in autism differ from that of developmental coordination disorder

[Article](#)

May 2023

Marie Martel · Livio Finos · Salam Bahmad · Alice Catherine Roy

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... It is not uncommon to find DCD associated with other NDDs, the most frequent being ADHD, with recent studies suggesting a potential genetic link between the two conditions [125][126] [127] [128][129][130][131]. Additionally, learning disabilities, communication disorders, specific learning disorders (especially those involving reading and writing), and ASD and conduct disorder may also co-occur with DCD [4,122,[132][133][134][135]. ...

Where Do Neurodevelopmental Disorders Go? Casting the Eye Away from Childhood towards Adulthood

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Giulia Antolini · Marco Colizzi

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... The distribution of several types of SLd was related to grades, sex, and some subtests of neurological soft signs, such as the finger-to-nose test, double simultaneous stimulation of hand and cheek test, stand-on-leg test, and tandem walk test. These results might be due to deficits in working memory which are associated with the tasks of motor coordination [31]. As SLd children show a lack of attention and concentration, they depend on feedback during movement more than on the feedforward strategy. ...

Sensory-based motor processing in children with specific learning disabilities

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Mar 2023

Zeinab Ahmed Hussein · Shima Abdel-Rahim Abdel-Aty · Gehan Hassan Elmeniaawy

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... Thus, fNIRS is a quieter and less-invasive method to use for those with these sensitivities. However, many of those with ASD struggle with sensory-motor issues (Piek and Dyck, 2004) that may prohibit them from wearing a fNIRS cap for an extended time or at all (Su et al., 2021). The development of remote, non-contact fNIRS systems where a cap is not required shows great promise for this population (Hirshfield and Meier, 2020). ...

Interdisciplinary views of fNIRS: Current advancements, equity challenges, and an agenda for future needs of a diverse fNIRS research community

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Feb 2023

Emily Doherty · Cara A. Spencer · Jeremy Burnison · Leanne Hirshfield

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... Indeed, while reading deficits are the primary diagnostic criterion, dyslexic individuals can display a variety of other difficulties, such as the impaired ability to sequence word sounds auditorily and letters visually, poor short-term memory for sequences, and poor motor sequencing leading to incoordination, clumsiness and poor handwriting [12]. Since sensorimotor deficits are often also observed in different developmental disorders, some researchers attribute dyslexia's cognitive and motor deficiencies to both functional and structural abnormalities of the cerebellum [13, 14]. ...

A Scoping Review on Movement, Neurobiology and Functional Deficits in Dyslexia: Suggestions for a Three-Fold Integrated Perspective

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Feb 2023 · Int J Environ Res Publ Health

● Michele Pellegrino · ● Tal Dotan Ben-Soussan · Patrizio Paoletti

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... Children with Developmental Coordination Disorder (DCD) present EFs impairment in several domains, such as working memory (especially visuospatial), inhibitory control, attention, flexibility and metacognitive aspects of action planning (reviews and metanalysis: Leonard et al., 2015; Wilson et al., 2013; Wilson et al., 2017; empirical studies: Piek & Dyck, 2004; Sartori et al., 2020). Moreover, some evidence supports deficits in hot executive functions in children with DCD, as they have a high sensitivity to immediate gratification and to distracting emotional stimuli that underly low decision-making skills in emotionally activating situations (Rahimi-Golkhandan et al., 2014. ...

Far Transfer Effects of Trainings on Executive Functions in Neurodevelopmental Disorders: A Systematic Review and Metanalysis

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Jan 2023 · NEUROPSYCHOL REV

● Clara Bombonato · ● Benedetta Del Lucchese · ● Costanza Ruffini · ● Chiara Pecini

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... The strict intertwining of sensory, motor, and cognitive functions is evidenced in aging and in neurological disorders. Indeed, sensory-motor dysfunctions often accompany higher-level dysfunctions in older populations [1] and in neurological subjects (e.g., in dyslexia, attention deficit hyperactivity disorders, or autism spectrum disorders) [2, 3]

The Sensory-Cognitive Interplay: Insights into Neural Mechanisms and Circuits

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Nov 2022

● Elisa Magosso · ● Mauro Ursino

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... For instance, developmental coordination disorder (DCD) entails early emerging persistent difficulties in the acquisition and execution of coordinated movements [77]. Motor coordination difficulties seem to be negatively associated with socioaffective abilities, thus being a potential bridge between DCD and ASD [81]. The sensory processes underlying explicit agency have been found to be different in children with DCD compared with neurotypical ones. ...

Motivation from Agency and Reward in Typical Development and Autism: Narrative Review of Behavioral and Neural Evidence

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Oct 2022 · BSRCCS

● Irene Valori · ● Laura Carnevali · Giulia Mantovani · ● Teresa Farroni

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... Bu bireylerde görülen motor problemlerin genellikle koordinasyon becerileri ile ilgili olduğu vurgulanmaktadır. Ayrıca normal gelişim gösteren yaşlılarına göre bir hareketi gerçekleştirmeye yönelik motor aktivitenin daha yetersiz olduğu bildirilmektedir (Beversdorf ve diğerleri, 2001; Piek & Dyck, 2004). Bu bağlamda kaynaştırma öğrencilerine yönelik hazırlanan eğitim politikalarında ve programlarında temel motor becerileri destekleyen egzersiz programlarına yer verilmesinin önemli olduğu vurgulanmaktadır. ...

... Sensory integration difficulties are used to describe the barriers experienced by individuals with challenges in sensory integration or sensory processing, which may affect cognitive, emotional, and motor functions in everyday life [5]. When difficulties in sensory integration occur in children with ADHD or other developmental conditions (e.g., developmental coordination disorders or autism spectrum disorder) [6][7][8], they may influence body motion, static posture control, and visual-motor integration [9]. Based on scores on the Child Sensory Integration Scale (CSIS), 79.5% of children with ADHD (6-11 years) were found to exhibit difficulties in sensory integration [10]. ...

Relationships between sensory integration and the core symptoms of attention-deficit/hyperactivity disorder: the mediating effect of executive function

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Aug 2022 · EUR CHILD ADOLES PSY

Jing Li · Wenchen Wang · Jia Cheng · Yufeng Wang

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... In connection with the aMCC and the left anterior insula, SMA has also been hypothesized to underline the experience of empathy for other people's fear or disgust emotions (Fan et al., 2011). Examinations of the SMA in psychopathology show deficits in activation and in integration of sensory input in ADHD and other developmental disorders (Piek and Dyck, 2004; Mostofsky et al., 2006). Therefore, unlike other brain regions, hyperactivity and hyperconnectivity in this region is uncommon in psychopathology. ...

The neurobiology of misophonia and implications for novel, neuroscience-driven interventions

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Jul 2022

Andrada D. Neacsiu · Victoria Szymkiewicz · Jeffrey T. Galla · Cade W. Spector

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... The verbal comprehension index of the WISC-V (Wechsler, 2016) was used to assess intellectual functions (Criterion D, DSM-5). Co-occurring ADHD diagnosis was not an exclusion criterion (n = 29), as co-occurring neurodevelopmental conditions are frequent in DCD (Piek and Dyck, 2004; Dewey, 2018), and was assessed according to the DSM-5 criteria [American Psychiatric Association [APA], 2013] by a multidisciplinary team including pediatric neurologists and neuropsychologists. Methylphenidate medication for ADHD (n = 14) was interrupted at least 24 h before the assessments. ...

Cognitive, perceptual, and motor profiles of school-aged children with developmental coordination disorder

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Aug 2022

Simon Baijot · Dorine Van Dyck · Alec Aeby · Nicolas Deconinck

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... The intensity and manifestation of these traits can vary greatly between individuals. In addition to cognitive and social variation, persons on the autism spectrum also express variable degrees of deficit in movement and sensory response [3][4] [5]. The entire range of variation is currently classified for treatment purposes as a single broad entity, ASD [6,7]. ...

Deep phenotyping reveals movement phenotypes in mouse neurodevelopmental models

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Mar 2022

Ugne Klibaite · Mikhail Kislin · Jessica Lynn Verpeut · Samuel S.-H. Wang

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... Moreover, TD children should not present any neurodevelopmental disability (controlled through short parental anamnesis and the parental questionnaire ADHD-RS-IV, score > 28 being indicative of ADHD; DuPaul et al., 1998). In children with DCD, concurrent ADHD diagnosis was not an exclusion criterion (n = 17), as neurodevelopmental comorbidities are frequent in DCD (Dewey, 2018; Piek and Dyck, 2004). ADHD diagnosis was assessed according to DSM-5 criteria (American Psychiatric Association, 2013) by a multidisciplinary team including pediatric neurologists and neuropsychologists. ...

Atypical resting-state functional brain connectivity in children with developmental coordination disorder

[Article](#) [Full-text available](#)

Dec 2021

Dorine Van Dyck · Nicolas Deconinck · Alec Aeby · Xavier De Tiège

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... 4 Piek and Dyck found that a child diagnosed with one developmental disorder is very likely to meet the criteria for another developmental disorder as well. 5 Delay can be classified as mild (functional age <33% below chronological age), moderate (34-66% of chronological age) or severe (<66% of chronological age). 3 Alternatively, the delay is said to be significant if the child's performance is 1.5 standard deviations or more below age-expected norms. ...

Improvements in developmental delay in a female child following chiropractic care: a case report and selective review of the literature

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Nov 2021

Matthew Doyle · Mike Marinus

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... Specifically, by age of 10, motor skills have become efficient and unnecessary concomitant movements (i.e., overflow) usually dissipate [2,9]. Conversely, children with ADHD continue to experience deficits in coordination, balance, speed, and rhythm [2,9] [10] [11] and overflow movements do not diminish [11,12]. Further, compared to TDC, children with ADHD present increased motor variability in temporal [13] and spatial [14,15] domains of assessment. ...

Manual dexterity and strength in young adults with and without Attention-Deficit/Hyperactivity Disorder (ADHD)

[Article](#)

Nov 2021 · NEUROSCI LETT

Alexandra Fietsam · Jacqueline Tucker · Manjeshwar Sahana Kamath · Kristina A. Neely

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... For this study, children with additional known psychiatric, neurologic or intellectual disabilities were excluded. Children with additional symptoms of sensory processing deficits (evaluated by means of the SP2) and / or symptoms of ADHD (evaluated by means of the ADHD Rating Scale) were included in the study due to the high comorbidity of these deficits in this population (Piek & Dyck, 2004; Watemberg et al., 2007). No group differences were found on these variables. ...

Social skills of kindergarten children with Global Developmental Delay (GDD), with and without Developmental Coordination Disorder (DCD)

Article

Dec 2021 · RES DEV DISABIL

● Miri Tal Saban · Mali Moshkovitz · Shahar Zaguri-Vittenberg · ● Aviva Yochman

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... Types of problem behaviour observed with autism include physical aggression, self-injury, property destruction, stereotyped behaviors, and tantrums are highly disruptive to classroom, community, and home environments and without intervention, and they are more likely to increase than improve (Horner, Carr, Strain, Todd, & Reed, 2002). During physical activities, children with ASD, indicate stereotyped and repetitive motor mannerisms, impairments of facial expression, postures, and gestures, are often clumsy and face many problems in motor coordination (Efstratopoulou, Janssen, & Simons, 2012; Piek & Dyck, 2004)

MEMORY ABILITIES IN CHILDREN

Chapter

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Jan 2014

● Maria Sofologi

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... The intensity and manifestation of these traits can vary greatly between individuals. In addition to cognitive and social variation, persons on the autism spectrum also express variable degrees of deficit in movement and sensory response [3][4] [5] . The entire range of variation is currently classified for treatment purposes as a single broad entity, ASD [6,7]. ...

Deep Phenotyping Reveals Movement Phenotypes in Mouse Neurodevelopmental Models

Preprint

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Aug 2021

● Ugne Klikaite · Mikhail Kislin · ● Jessica Lynn Verpeut · Samuel S.-H. Wang

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... Attention deficit disorder is one of the most common psychopathological problems encountered in children, this term going through several concepts and proposals issued in various fields, but in general, the starting point of the definition is clear and shows inattention, impulsivity and hyperactivity, all these being multiple dimensions that are related to each other (Guevara & Galarza, 2015; Piek & Dyck, 2004; Urzua, Alfonso, Marcos et al., 2009). In addition to difficulty concentrating, the inability to shape their attention in response to the demands of the external environment, as well as the immediate reaction given by impulsivity (Salamanca, 2015), these children also have a number of motor deficits, including and motor coordination (Flapper, Schoemaker, 2006; Pitcher, Piek & Hay, 2003; Sergeant, Piek & Oosterlaan, 2006). ...

Correlational Study Regarding the Attention of the Preparatory Class Students to the Physical Education and Sport Lesson

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Mar 2021

● Balanean Denisa · ● Simona Petracovski (Ionescu)

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... Sensory processing differences are common among many developmental disorders and mental health concerns, including attention-deficit/hyperactivity disorder (Ghanizadeh, 2011), intellectual disabilities (Engel-Yeger et al., 2011), schizophrenia (Javitt, 2009), depression (Serafini et al., 2017), obsessive-compulsive disorder, and anxiety (Houghton et al., 2020), among others. Sensory processing differences in these populations have been linked to higher-order clinical and behavioural symptoms (Elliott et al., 2018; Piek & Dyck, 2004; Wallace & Stevenson, 2014), findings that have led to an increased focus on this burgeoning area of research. With that said, there is still considerable debate in the field on how sensory processing differences should be conceptualized and measured within these populations. ...

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● Samantha Schulz · R. A. Stevenson

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... spectrum disorder (ASD) [1,43]. In addition to cognitive and social variation, persons on the autism spectrum also express variable degrees of deficit in movement and sensory response [35, 36,44]. Overall, the highly variable combination of phenotypes associated with ASD presents a challenge to classification and diagnosis. ...

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... Difficulties in motor control and coordination affect 5-6% of school-aged children 1,2 and are identified by low motor performance scores (LMP). These difficulties are typically classified in the literature as Developmental Coordination Disorder (DCD), but can also be related with other developmental disorders, such as autism and attention deficit hyperactivity disorder (ADHD) 3 . The hypotheses regarding the causes of motor coordination and control problems, such as DCD, state that motor learning skills may affect automatization deficits or errors in creating accurate movements according to predictive movements, both as consequences of cerebellum pathology 1

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Childhood Disorders: Learning and Motor Skills Disorders

August 2006

Michael B. First ·  Allan Tasman

childhood disorders – learning and motor skills disorders;children and adolescents with developmental coordination disorder;disruptive behavior disorders;attention-deficit/hyperactivity disorder (ADHD);psychotherapeutic interventions;somatic treatments;DSM-IV-TR Reading Disorder as “Specific Reading Disorder”;DSM-IV-TR Mathematics Disorders as “Specific Disorder of Arithmetic Skills.”;DSM-IV-TR ... [\[Show full abstract\]](#)

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Increased associated movements: Influence of attention deficits and movement difficulties

April 2008 · Human Movement Science

 Melissa Licari · Dawne Larkin

This study was designed to examine whether increased associated movements (AMs) reflect motor difficulties or the symptoms associated with attention disorders. Four groups of male children (N=51) aged 6-8 years participated: Group 1 consisted of 13 children diagnosed with developmental coordination disorder (DCD); Group 2 consisted of 13 children diagnosed with attention deficit hyperactivity ... [\[Show full abstract\]](#)

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