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There have been very few studies on the neural basis of DCD, especially with comparisons to other developmental disorders. Here, we conducted brain imaging on youth (age 8-17) with DCD compared to autism spectrum disorder (ASD; 80% with comorbid motor impairment) and typically developing (TD) groups. Participants completed diffusion weighted imaging (Ns = 16 DCD; 22 ASD; 22 TD) and functional MRI (fMRI; Ns = 23 DCD; 30 ASD; 33 TD). Compared to TD, individuals with DCD show aspects of lower diffusivity in the right parahippocampal cingulum, middle cerebellar peduncle, cortico-striatal tract, left cortico-descending projections, and bilateral inferior fronto-occipital fasciculus (IFOF). Unique DCD hypodiffusivity differences (compared to TD and ASD) include the cortico-descending tracts, and aspects of the forceps major (QA, MD, AD) and the forceps minor (QA). fMRI data indicate hypoactivity in the DCD group compared to TD for hand and face actions: 1) during action observation in the pons; 2) during action imitation in the right supplementary motor area (SMA); 3) during mentalizing in the bilateral dorsomedial prefrontal cortex, premotor cortex, SMA, and cerebellum; and right frontal pole and pars triangularis. For mentalizing, unique DCD hypoactivity compared to ASD and TD groups was found in the right frontal pole, pars triangularis, and premotor cortex. These data indicate many frontal and motor regions and pathways may be compromised in DCD, but only a few of them (frontal regions, cortico-descending tracts) may be unique DCD differences. These data inform our understanding of DCD and may contribute to screening and therapy.

ARE THERE RELATIONSHIPS BETWEEN PERFORMANCE OF DAILY ACTIVITIES AND LIFE QUALITY AMONG CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDERS (DCD)?

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Children's abilities to perform daily activities contribute to how they master their life and to their well-being. However, literature about daily performance characteristics of children with DCD and the relationships with their quality of life is scarce.

The aim of the study was to describe daily performance characteristics and life quality among children with DCD in comparison to children with typical development, and to find the relationships between these concepts.

Methods: Participants were 60 children aged 4-9 years, 30 children diagnosed with DCD by a neurodevelopmental pediatrician according to the DSM-5 (APA, 2013), and 30 children with typical development, matched by age, gender and nationality. All children were further evaluated by the M-ABC-2 test and the Children Activity Scale – Parents (ChAS-P) questionnaire to confirm their group differentiation. Parents of both groups completed the Performance of Daily Activities (PDA) and the Pediatric Quality of Life Inventory™ (PedsQL™) 4.0 Short Form questionnaires.

Results: Significant inferior performance of children with DCD was found in all four daily activities performance domains i.e., self-maintenance, eating skills, play, and academic performance (PDA questionnaire). Their physical and psychosocial quality of life scores (PedsQL™) were significantly inferior in comparison to those of controls. A positive significant correlation was found between play abilities and physical life quality in both groups (DCD: $r = .555$, $p < 0.01$; controls $r = .365$ $p < .05$).

Regression analysis indicated that group attribution (i.e., DCD versus control) predicted 54%, while eating ability added an additional 4%, and play abilities additional 9% to the prediction of children's physical life quality. Discriminate analysis indicated that based on one function, including the four performance of daily activities domains, (Wilks lambda = .252 $p < .001$), 95% of the children were correctly classified into their groups. The variables which contributed the highest values to group differentiation were the play (.747) and eating (.734) sub-scales scores.

Discussion and Conclusion: Results indicated the importance of analyzing trivial daily activity performance characteristics of children with DCD with standardized tools. Understanding the personal profile of each child may lead to supplying the appropriate intervention and prevention of consequent impact on his/ her life quality.

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Introduction: Developmental coordination disorder (DCD) is a neurodevelopmental disorder that affects a child's ability to learn motor skills and perform daily activities. While DCD is primarily a motor disorder, children with this condition are at high risk of mental health concerns (e.g., anxiety, depression, low self-esteem). Studies report that parents of children with DCD experience stress and frustration due to worries about their children and receiving insufficient support and services for their child. Objective: To explore parent perceptions of their child's emotional and mental health, as well as the impact of DCD on the family and parental mental health.

Methods: We conducted a secondary analysis of quantitative and qualitative data from the impACT for DCD Questionnaire, a cross-sectional online survey of parents of children with a diagnosis or suspected diagnosis of DCD living in British Columbia from October, 2019 to April, 2020.

Results: A total of 244 participants responded from across the province. More than one-third of parents (36%) rated their own mental health to be fair or poor, and the majority (89%) expressed concern for their child's social and mental health. Statistical analyses of associations between mental health and geographic location, age of the child, and family income are underway. An exploratory content analysis of parents' comments is also in progress to provide greater insight into these findings.

Conclusions: Preliminary results indicate the need to address the mental health of children with DCD and their families and to advocate for more support and services.

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Introduction: Children with Developmental Coordination Disorder (DCD) may be more vulnerable at the roadside compared to their typically developing peers. It is unclear whether adults with DCD and parents of children with DCD are aware of this. Furthermore, it is unclear whether co-occurring neurodevelopmental disorders have an additive impact.

Aims/objectives: To describe behaviours exhibited by adults and children with DCD (the latter reported by parents) at the roadside and determine how these individuals perceive road crossing actions. To identify general perceptions of accidents and unrealistic optimism.

Methods: We utilised a questionnaire to survey the lived experience of adults with DCD and parents of children with DCD. We compared different co-occurrence groups.

Results: Individuals with DCD and co-occurrences which have previously been linked to unsafe crossing behaviours reported greater regularity of dangerous looking behaviour (forgetting to look, running without looking) and visibility (crossing between cars, crossing when you can't see). Adults and parents were aware of the risky nature of these behaviours. When asked "why" crossing ability might be different, perceptual and motor difficulties alongside heightened and lowered awareness of risk were cited. Unrealistic optimism was not an explanation for the risky behaviour in adults with DCD, in fact, these adults demonstrated a clear understanding of the likelihood of accidents.

Conclusion: The findings suggest that road crossing is perceived to be challenging for both children and adults with DCD especially those with co-occurring neurodevelopmental disorders. This needs to be taken into account when considering remediation and support for this group.

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Introduction: Alberta Health Services (AHS) has recently begun putting standardized services in place in order to provide consistent, evidence-based, family-centred care and improve health outcomes.

Objectives: The AHS Developmental Coordination Disorder (DCD) Standardized Service aims to set targets for quality clinical service delivery, improve access and wayfinding, increase service efficacy, and guide AHS therapists to provide equitable services for children with DCD.

Approach: Our multi-disciplinary frontline clinical team was tasked with creating a standardized service for AHS management in order to guide service delivery to pediatric clients with DCD. The team conducted a literature review and subsequently created a clinical practice guide tailored for AHS pediatric therapists that provides detailed information on best practice in the screening, assessment, and management of children with DCD.

Discussion: The standardized service and clinical practice guide were created between March 2020 and November 2020 and approved by the AHS Pediatric Implementation Committee in December 2020. Final drafts were completed in November 2021 and presented virtually to AHS pediatric therapists. An iterative implementation plan was created to ensure adherence to the standardized service and clinical practice guide. The plan includes knowledge brokers, education, surveys, site mentors, SharePoint site, community of practice, and sustainability. Risks and mitigation were identified.

Relevance: Creating a plan to support all therapists to adhere to consistent service delivery and best practice ensures that, in AHS, children with DCD experience optimal opportunities for equitable access to services, self-efficacy, increased participation, self-advocacy, and improved quality of life.

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Background: Parents of children with Developmental Coordination Disorder (DCD) often express concerns long before their children receive their diagnosis. However, knowledge on early signs of DCD is limited. Yet, a better understanding of the early development could enhance the diagnostic process and facilitate adequate early support.

Aims: To explore parental-reported early markers of DCD from birth up to 5 years.

Methods and procedures: Semi-structured interviews were conducted in parents of 10 children diagnosed with DCD between 2018 and 2021. Parents were asked to talk about their child focusing on the period between birth and five years of age. Up to three interviews were performed of each participant with a duration between one and three hours. The interviews were then transcribed ad-verbatim and analyzed using an inductive thematic analysis approach.

Outcomes and results: Parents described alterations in motor and socio-emotional development, play characteristics, emotion regulation, fatigue, sensory processing, and executive functioning. Clinicians should heed certain specific parental behaviors as they are observed often in parents of children with DCD.

Conclusions and implications: Special emphasis should be placed on specific developmental domains described above when conducting a parental medical history in children with DCD.

THE IMPACT FOR DCD - USA RESULTS: UNDERSTANDING CHALLENGES AND EXPERIENCES OF CHILDREN WITH DCD IN THE UNITED STATES

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The “Impact for DCD” study was developed and conducted in Australia with 443 parents of children with motor difficulties to understand challenges in five domains: diagnosis, activity and participation, education, therapy, and social and emotional health. The goal of this study was to administer the Impact for DCD survey to parents of children living in the United States, in order to understand their unique challenges and to identify differences in response patterns between countries. A total of 217 parents of children aged 4 to 18 years (64.4% males) completed the survey between 2020 and 2021. The majority of children (82.49%) had a formal diagnosis for movement difficulties (DCD n = 135; Dyspraxia n = 81), and 91.6% of parents reported that receiving a diagnosis was helpful. The most common co-occurring diagnoses were childhood apraxia of speech and other speech-language disorders (25.7%), attention deficit hyperactivity disorder (22.7%), and anxiety (19.7%). The majority of parents reported that their children withdrew from or avoided movement-related activities (59.6%), and nearly all parents (94%) were concerned about the impact of the motor difficulties on their children’s social and emotional health. Despite these concerns, only 37% of parents reported feeling that their child received sufficient therapy to assist with movement difficulties. Overall, even though most children had a diagnosis, parents reported feeling frustrated with others’ understanding and awareness of the condition and with therapy services. The sample size and responses demonstrate that the United States is significantly behind other countries with regard to understanding and awareness of DCD.

CAN ATTENTION BE TRAINED? THE RELATIONSHIP BETWEEN MOTOR PERFORMANCE AND ATTENTIONAL ABILITIES IN CHILDREN WITH AND WITHOUT DEVELOPMENTAL COORDINATION DISORDER

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Background: Although attentional impairments have been reported in children with Developmental Coordination Disorder (DCD) it is still unclear which type of attention may cause these problems.

Aim: to test the relationship between attentional abilities and motor skills in children with DCD (n=34) and typically developing (TD; n=34) and to evaluate whether attentional abilities can be trained with Active Video Games (AVG).

Methods: Sixty-eight children from Sao Carlos, Brazil, were assessed on three types of attention; divided attention, distractibility and sustained attention using the KiTAP and on the Movement Assessment Battery for Children and the PERF-FIT before and after a five-week training period.

Results: The accuracy, reaction time (RT) and standard deviation (SD) of the divided attention showed the highest relation with motor outcomes. The more omissions, the longer RT and the higher variability, the poorer motor performance (Rs range= -.242; -.447). After training, the number of errors on distractibility was significantly less, but the SD-RT increased in TD, and decreased in the DCD group. Both groups improved on divided attention (less errors and faster) and sustained attention (less errors and longer RT).

Conclusion: the finding that divided attention is the type of attention with the highest correlation to motor performance and that aspects of attention can improve through training, gives us new insights in mechanisms underlying the effect of AVG's. They may stimulate children to divide attention over the multiple visual, auditory, and motor aspects of the games thereby increasing the accuracy in all three attentional abilities, which may indirectly improve motor performance.

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Background. Children with developmental coordination disorder (DCD) experience motor difficulties that negatively impact their participation in everyday life and require intervention.

Objectives. To study the impact of an adapted Cognitive Orientation to daily Occupational Performance (CO-OP) five-day intervention program (Vlog4Succes) for children DCD. The intervention was unique in its combination of individual CO-OP sessions and group activities, the short duration, the involvement of parents, and the use of video logs.

Methods. Eighteen children with DCD (aged 8-17 years) participated in the intervention during which they worked on three intervention-goals. After the intervention, during a coaching trajectory for parents, children worked on a transfer-goal. Assessment took place at four moments in time: two pre-test measures, a post-test measure and a 3-month follow-up measure. Primary outcome measures focused on changes in performance and satisfaction of intervention- and transfer-goals (i.e., COPM and PQRS-G). Secondary outcome measures focused on changes in children's attitude, motivation, and confidence in relation to motor skill activities.

Results. Significant improvements were found with regard to the performance and satisfaction of intervention-goals. For the transfer-goal, only parents reported significant improvements. Finally, parents reported improvements with regard to the attitude, motivation and confidence of their children.

Conclusions. The adapted CO-OP intervention is effective for improving intervention-goals, but less effective for transfer of learned skills to other goals after the intervention. Future research should focus on how post-intervention parental coaching can be improved in order to increase generalization and transfer.

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Background: Developmental coordination disorder (DCD) has a negative impact on everyday activities and academic achievement in children, mainly owing to similar underlying motor and cognitive constructs. Academic achievement of boys and girls seems to be different, with boys being more prone to academic backlogs, especially in language-related areas.

Aim: This study investigated if boys with DCD displayed more academic problems than girls with DCD.

Setting: Ten-year-old children (N = 221, SD 0.41) from different economic backgrounds were randomly selected for assessment as part of the NW-CHILD (North-West Child Health, Integrated with Learning and Development) longitudinal study in the North West Province of South Africa.

Methods: The Movement Assessment Battery for Children, Second Edition, was used to determine DCD status in the group. The results of the Annual National Assessment and the mid-year June exam, which included six learning areas, were used to analyze academic differences between typically developing boys and girls and those who were identified with DCD (seven boys, seven girls). Independent t-testing and Mann–Whitney non-parametric tests were used to determine differences between boys and girls.

Results: Boys with DCD had inferior literacy and numeracy skills, significantly poorer manual dexterity and balancing skills and also displayed statistically and large practically significant weaker mid-year grade point averages than girls. Children with DCD also portrayed poorer academic achievement than typically developing children.

Conclusion: Significant differences in balancing skills and in languages between boys and girls with DCD might have contributed to the practically significant poorer mathematics performance of boys.

PSYCHOMETRIC PROPERTIES OF THE LITTLE DEVELOPMENT COORDINATION DISORDER QUESTIONNAIRE
IN A FINNISH SAMPLE (LDCDQ-FI)

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Objectives: Early identification of motor difficulties requires valid, reliable, and accessible methods. The Little Developmental Coordination Disorder Questionnaire (LDCDQ) is a brief screening questionnaire to identify young preschoolers at risk of a later diagnosis of developmental coordination disorder (DCD).

This study aimed to investigate the psychometric properties of the Finnish LDCDQ (LDCDQ-FI).

Methods: The LDCDQ-FI was completed by parents (n=541) and preschool teachers (n=468) of a community sample of children (n=608; 54% girls) aged 3–5 (mean 5.02±0.61 y). A sub-sample of parents (n=110) repeated the questionnaire after an interval of approximately three weeks.

Results: The bifactor model (CFA), with a one non-correlated general factor and three specific factors, fit the data. Internal consistency was high among preschool teachers ($\alpha = 0.93$) and adequate among parents ($\alpha = 0.89$). Intra-rater agreement between the parents' replicated test scores was 0.84 while parent-teacher inter-rater reliability was poor (0.32). Parents rated (67,3) significantly higher sum scores than teachers (65.5) ($p < 0.001$).

Conclusion: The LDCDQ-FI showed sound psychometric properties, including internal consistency, construct validity and test-retest reliability. However, low inter-rater agreement suggests that a combination of parent's and teacher's views can give a broader picture of a child's motor difficulties across environments. Future research should examine concurrent and predictive validity in clinical and community samples.

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Background: Spatial skills are essential for independent living as they enable navigation to new locations, route learning and path retracing. Alongside motor coordination difficulties, there is evidence that individuals with Developmental Coordination Disorder (DCD) experience spatial processing difficulties. However, although self-reports indicate that adults with DCD report difficulties with sense of direction and navigation, no known studies have investigated navigation skills and strategies in DCD. Furthermore, given evidence that individuals with DCD report higher levels of anxiety, we will additionally investigate associations between anxiety and navigation in this group.

Aims: This study compares navigation abilities, navigation strategies and spatial anxiety in adults with and without DCD.

Methods: Participants include 180 Adults (aged 18-55 years) across two groups 1) DCD, 2) Typically Developing. In this cross-sectional study, participants complete a series of tasks on the online Qualtrics platform. This includes the Adult Developmental Coordination Disorder Checklist, the State-Trait Anxiety Inventory, the Wayfinding Anxiety Measure, the Wayfinding Questionnaire, the Wayfinding Strategy Questionnaire, and a navigation task (van der Ham et al 2020).

Results: Our preliminary analysis shows that 1) compared to those with typical development, individuals with DCD have significantly lower navigation and orientation scores, but significantly higher distance estimation scores. 2) For spatial anxiety, the DCD group had significantly higher anxiety scores across navigation, manipulation and imagery spatial sub-domains (controlling for general anxiety). 3) For wayfinding strategy use the DCD group used orientation strategies significantly less often than those with typical development, however there was no group difference in the use of route strategies. 4) Finally, spatial anxiety was not a significant predictor of navigation skills for either group.

Conclusions: The findings establish benchmarks of navigational skills in DCD, and highlight spatial anxiety and route strategies as factors that may inhibit success, and could be suitable intervention targets.

PHYSICAL ACTIVITY BELIEFS AMONG 4-6-YEARS-OLD CHILDREN AT RISK FOR DEVELOPMENTAL COORDINATION DISORDERS

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Objectives: Children with developmental coordination disorders (DCD) perceive to have more negative physical activity (PA) self-beliefs than their peers. How early in childhood these negative beliefs are espoused, is rarely studied. Our aim was to study, whether PA beliefs (joy, enjoyment, fear, motor competence, PA level) of 4-6-years-olds with the risk for DCD differ from the beliefs of their more skilled peers.

Methods: From convenient based sample (N=568; 54.4% girls) three 15 percentile motor skill groups were identified (lowest=LG, average=AG, highest=HG groups) based on four fundamental motor tasks (standardized by age). Structured pictorial interview with four-point Likert scale was used to collect data from child's PA beliefs (joy, enjoyment, fear, motor competence, PA level).

Results: MANOVA showed main effects of age [$F(10,494)=2.02$, $p=.030$] and gender [$F(5,246)=4.41$, $p<.001$], but no effect of motor group differences. ANOVA revealed differences in beliefs of PA level (4 years-old > 6 years-old, boys > girls) and fear (girls > boys). However, negatively tuned PA beliefs seemed to be more common in LG than in other groups.

Conclusion: In average 4-6-years-old with low fundamental motor skills have equally positive PA beliefs as their more skilled peers. However, at individual level it is more common in LG to have negative PA beliefs. Thus, research should pay more attention to individual profiles, and further, to development of these beliefs, and thereby, to long-term effects on motor skill learning, health, and further, quality of life.

HOW SCHOOL-BASED TIERED REHABILITATION SERVICES WORK IN THE REAL WORLD TO PROMOTE INCLUSION

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Introduction: Tiered models of school-based rehabilitation offer an innovative approach to promoting inclusion and participation in learning for children and youth including those with DCD. Tiered models, including our dynamic model, Partnering for Change (P4C), involve a continuum of three tiers: universal, targeted, and individualized services.

Aims: We aim to present findings of two realist studies conducted to develop the first-known middle-range theory of tiered school-based rehabilitation services to inform research, policy, and practice.

Method: Realist research is focused on understanding how interventions work in real-world contexts. A realist synthesis (n=52 articles) determined: What are the outcomes of successful tiered approaches to rehabilitation services for children and youth in education settings, in what circumstances do these services best occur, how and why? A retrospective realist evaluation (n=34 semi-structured interviews, 4 focus groups) ascertained: “How and why did P4C work, for whom, and in what contexts?” Data were collected from several stakeholder groups.

Results: Realist synthesis results indicated that tiered models led to positive student, family, therapist, and system outcomes. To attain positive outcomes, tiered models must support interprofessional collaboration, capacity building, and be authentic. Therapists must have adequate time, funding, and material support. Realist evaluation results led to the development of a theory about how and why P4C achieved its objectives at the child, therapist, educator, parent, and system level, and what conditions contributed to these outcomes.

Conclusion: Findings advance understanding of how school-based tiered rehabilitation works in the real-world to promote learning and inclusion for children and youth with DCD.

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Background: Young children with Developmental Disabilities (DD) are at risk for decreased participation. Parenting, usually a rewarding, meaningful, and desired life role, can also present significant challenges for parents of children with DD. Mothers spend a significant amount of time finding, accessing, and retaining services; coordinating services between sectors; advocating for their children; and driving their children to appointments. Involvement with professional supports and services can help mothers to enable their child's participation as parenting stress negatively influences parenting behavior, which in turn has been shown to impact children's development.

Objective: As mothers carry a heavy load in the provision of childcare, the goal of this study was to understand mothers' perceptions of their child's participation. This knowledge is fundamental for designing better strategies to improve the participation of young children with DD.

Method: A thematic inductive approach with in-depth semi-structured interviews was conducted. Eleven mothers, 30–40 years old with a child 4–9 years of age diagnosed with DD, were included.

Results: Concerning the child's participation, we revealed that according to mothers, there are different perspectives amongst mothers and children, mothers and fathers, and mothers and professionals. This information indicates the urge to gather data regarding children's participation from different perspectives. Mothers have the experience that their children are more positive towards their participation. Mothers want clinicians to view their children less from a deficit perspective. Mothers are more worried than fathers and feel that fathers have less understanding of their child's capacity to participate.

THE ABILITY OF TEACHERS TO IDENTIFY GRADE 1 LEARNERS IN LOW SOCIO-ECONOMIC ENVIRONMENTS WITH POSSIBLE DEVELOPMENTAL COORDINATION DISORDER

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Introduction: Developmental coordination disorder (DCD) can be defined as motor performances that are substantially below the expected levels of the child's ability, considering the child's chronological age and previous opportunities for gaining skills. Therefore, early identification of learners in low socio-economic environments with possible DCD is important. Although various screening tools are available, it is unclear whether teachers can use the movement assessment battery for children - second edition checklist (MABC-2 checklist) to identify learners with possible DCD.

Aim: To establish teachers' ability to identify Grade 1 learners in low socio-economic environments with possible DCD.

Methodology: The study was conducted in the Mangaung Metro, Motheo District of the Free State Province, South Africa. Grade 1 learners aged 6–8 years ($n = 200$) from a low socio-economic environment attending quintile one to three schools were randomly selected for assessment. Twenty-nine teachers participated in the study. Kinderkineticists identified learners with possible DCD (displaying motor skills far below the child's age) by means of the MABC-2 performance test. The teachers used the MABC-2 checklist to identify possible DCD. The convergent validity of the MABC-2 performance test and checklist was compared.

Results: The convergent validity between the MABC-2 performance test and the MABC-2 checklist indicated a kappa (k) coefficient of 0.17, indicating a slight agreement between the performance test and the checklist. Overall, the specificity was 58% (105/180), and the sensitivity was 85% (17/20).

Conclusion: Teachers could effectively identify learners with possible DCD. However, they demonstrated a low ability to identify learners without possible DCD when using the MABC-2 checklist. It is therefore recommended that the performance test should be used in conjunction with the checklist to obtain the most reliable results. In addition, these children should be assisted as soon as possible with the appropriate interventions by a motor specialist in order to help them overcome their coordination difficulties.

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Developmental Coordination Disorder (DCD) is a chronic life-long disorder. Yet, there is a paucity in studies eliciting parents' perspective relating to their adolescents with DCD. This study focused on parents of adolescents with probable DCD (pDCD) and their perceptions of its implications on themselves and their adolescents.

Method: Using a phenomenological approach and thematic analysis, we conducted a focus group including seven parents of adolescents with pDCD aged 12-18yrs.

Results: Three major themes emerged from the data: (a) Manifestation and implications of DCD: Parents described the implications of DCD on their adolescents' performance in self care, education, and psychosocial aspects; (b) Discrepancy in perceptions of DCD: Parents described a gap between their's and their children's understanding of the latter's difficulties, as well as a gap between the parents themselves in their views of their child's difficulties. Yet, both mothers and fathers expressed concern about their children's future performance and their ability to be independent; (c) Diagnosis of DCD and strategies for overcoming its implications: The parents' shared their thoughts concerning the diagnosis and labeling of DCD as well as the strategies they used to assist their children.

Conclusions: Based on parents' perspectives, it appears that adolescents with pDCD continue to experience participating limitations in daily life activities, and psychosocial difficulties. The perspective discrepancies found in the study suggest that information should be elicited from both parents and their adolescents' concerning the implication of pDCD. These results may also assist in developing a client-centered intervention protocol for parents and adolescents.

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Developmental coordination disorder (DCD) is a disorder affecting motor coordination which negatively impacts academic and daily activities in various environments. The military is a highly structured environment with limited freedom, placing high demand on motor coordination, organizational ability, time management, and social skills. All these present challenges to young adults with DCD. Our study aimed to describe and assess the functioning of young adults with pDCD in the Israel Defense Forces.

Methods: Participants included 429 of young adults recruited via the Israel Army Health Survey upon discharge from active service. The participants were divided into three groups based on the Adolescents & Adults Coordination Questionnaire (AAC-Q) scores: probable DCD (n=135), suspected borderline DCD (n=149), and control (n=145). Participants completed the AACQ and the Army Questionnaire.

Results: The probable-DCD group reported significantly more difficulties in their military service than did the other groups: more unit reassignments, more accidents during field operations, and more complaints related to discipline and professional behavior. Significant differences emerged between both DCD groups and the control group in “understanding of learning materials,” “forgetting belongings,” and “success in the army.”

Conclusions: The participants with probable DCD and suspected borderline DCD were able to integrate into the army, but the probable-DCD group performed significantly worse than the others and reported more difficulties participating in the army. These results highlight the importance of being aware of soldiers with probable DCD, in order to assign them duties that fit their abilities.

THE RELATIONSHIP BETWEEN A CLINICAL DIAGNOSIS OF DEVELOPMENT COORDINATION DISORDER AND MABC-2 SCORES

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Background: Although a MABC-2 score \leq Pc16 is considered as cut-off for diagnosing DCD in research, there could be reasons in clinic for deviating from this.

Objectives: This study aims to explore clinical data of children diagnosed with DCD regarding MABC-2 scores, other test scores and comorbidities.

Methods: Children at risk or with developmental concerns, monitored at the Ghent Centre of Developmental Disabilities (Belgium), were studied retrospectively. Children were excluded in case of a medical diagnosis as e.g. CP, or when IQ was <70 . The DCD diagnoses were made by a multidisciplinary team based at least on information from child, parents and teacher (interviews and checklists), neurological assessment, observation of motor skills and motor tests. DSM-criteria and EACD guidelines were applied. Results of MABC-2, Beery VMI and handwriting test and diagnoses of DCD, ADHD and ASD were collected.

Results: Data from 463 participants, of whom 239 (52%) were prematurely born, were available. In this group 236/463 (51%) children were diagnosed with DCD or at risk, 52/463 (11%) with ADHD and 131/463 (28%) with ASD. 315/463 children (62%) scored \leq PC16 on MABC-2. 61/227 (27%) children without DCD scored \leq Pc5 on MABC-2. More children with ASD without DCD scored $<$ Pc5 on MABC-2, compared to children without ASD and without DCD ($p=.039$). 32/236 (14%) children with DCD or at risk, scored $>$ Pc16.

Conclusions: Although the 16th percentile of the MABC-2 was suggested as the cut-off score for the diagnosis of DCD, it was shown that this cut-off cannot be strictly applied in clinic.

SENSORY-MOTOR SYNCHRONIZATION DURING WALKING AND RUNNING TO BEATS IN AUDITORY METRONOMES IN DEVELOPMENTAL COORDINATION DISORDER

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Intro / Background: Developmental Coordination Disorder (DCD) is characterized by difficulties in motor coordination, conceptualized by internal-model deficit. In this view, coordination is regulated by sensory-motor interactions. It is known that children with DCD are inferior in synchronizing their finger-tapping with auditory metronomes. However, an unexplored question is whether these deficits in synchronisation and timing are also present during tasks of daily life, such as walking or running.

Aims / Objective: This research aims to investigate the consistency of synchronising foot-steps during walking and running to beats in metronomes, in children with DCD compared to typically developing children (TDC).

Methods / Approach: Children with a diagnosis or probably DCD from 8 to 12 years and age-and-gender matched TDC participated. Children walked and ran overground for 3 minutes in a 20x15meters oval-path, in 2 conditions (silence, metronomes). Synchronisation consistency was measured, and expressed by resultant vector length (RVL), a value from 0 (low consistency) to 1 (high consistency).

Results / Discussion: To date, 7 DCD and 10 TDC were included. Children with DCD synchronised significantly with less consistency (RVL:0.51±0.27) than TDC (RVL:0.77±0.16) when running ($p=0.0146$). No significant difference was observed in synchronisation consistency between groups during walking.

Conclusion / Relevance: Preliminary results suggest that children with DCD have greater difficulty with consistent synchronising their steps when running to metronomes. These results might suggest a core timing deficit underlying motor difficulties in DCD. Results of a larger sample might give more conclusive results given the large within-group-heterogeneity in the DCD group.

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Introduction: Effective motor learning interventions are essential for children with DCD in order to facilitate activity and participation. Effectiveness of physiotherapy interventions for children with DCD depends not only on content of the therapy (i.e., the type of intervention, which skills are practiced, etc.), but also on teaching methods employed by therapists. However, little is known regarding the teaching methods that are used in this setting.

Objectives: Using the OPTIMAL theory for motor learning from Wulf and Lewthwaite (2016) as a framework, this study aimed to gain insight in the implementation of: (1) expectancies, (2) autonomy, and (3) attention in physiotherapy interventions for DCD.

Methods: Eighteen sessions of seven physiotherapists were videotaped and analyzed with Noldus The Observer XT using a novel observational tool based on the OPTIMAL framework. Relative duration (% of session time) and frequency were extracted for teaching methods related to expectancies, autonomy, and attention.

Results/Discussion: Data has been collected and processed. Final analysis has yet to be completed and is estimated to be finished December 2021.

Conclusions/Relevance to DCD in the real world: Children with DCD need appropriate guidance during physiotherapy sessions. This observational study provides valuable insights in the teaching methods that are currently used in physiotherapy sessions and reveals to what extend the OPTIMAL variables (1) expectancies, (2) autonomy, and (3) attention are applied in motor learning interventions for children with DCD.

CROSS-CULTURAL VALIDATION OF THE BRAZILIAN LITTLE DEVELOPMENTAL COORDINATION DISORDER QUESTIONNAIRE (LDCDQ-BR) FOR PRESCHOOL CHILDREN

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Introduction: Motor difficulties associated with Developmental Coordination Disorder (DCD) are frequently apparent before the accepted diagnostic age of 5. Tools to support identification of DCD markers would allow provision of early intervention to reduce negative sequelae.

Objectives: Investigate the measurement properties and define a preliminary cut-off point for the Brazilian version of the Little Developmental Coordination Disorder Questionnaire (LDCDQ-BR).

Methods: Parents of 3- and 4-years-old children (n=312; 154 girls) from Belo Horizonte/MG, Brazil, completed the LDCDQ-BR, the Brazil Economic Classification Criterion and a demographic questionnaire. A sub-set of children (n=119) was assessed with the Movement Assessment Battery for Children–2nd Edition; another sub-set (n=77) completed the LDCDQ-BR a second time.

Results: Rasch analysis showed adequate mean values of Infit (1.04, t=0.43) and Outfit (0.98, t=0.00), indicating good item fit with only one item with erratic scoring, suggesting unidimensionality of the questionnaire. The reliability of the items (0.97) was excellent, and average (0.72) for children, who were separated in two levels of ability. Principal component analysis suggested the possibility of a second dimension, but reanalysis with two sub-categories resulted in lower reliability of the measures, the same way as reanalysis considering the three sub-categories of the questionnaire. Significant, low correlations were found between the LDCDQ-BR and MABC-2 ($r = 0.301$, $p < 0.01$). Test-retest reliability was 0.77 (total score) and 0.44-0.78 (individual items). ROC curve analysis revealed sensitivity of 68% at a cut-off score of 64.

Conclusion: The LDCDQ-BR shows promising psychometric properties to support early identification of DCD in Brazilian children.

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Background: DCD is rarely a “pure” motor difficulty. Understanding both motor and non-motor difficulties and how they interact is needed to plan appropriate support for a child. The Movement ABC-2 Test and Checklist are popular tools for the assessment of DCD. Both incorporate a ‘non-motor’ component to capture other factors that might affect movement.

Aim: To evaluate use of section C of the Movement ABC-2 Checklist, designed to document non-motor factors which might affect motor competence.

Methods: The parents of 50 children with DCD aged 5-17 years (80% male) completed the Movement ABC-2 Checklist as part of a diagnostic assessment for enrolment onto a DCD research programme. The combined Test and Checklist motor scores were used to confirm criterion A and B of the APA diagnostic criteria. In section C, parents indicated which of 12 non-motor factors were considered to affect their child’s movement.

Results: A mean of seven non-motor factors were noted (range: 1-12). Most commonly reported were ‘disorganised’, ‘hesitant/forgetful’, ‘distractible’, and ‘upset by failure’. Some parents added notes to explain the impact of these factors more fully. The number of non-motor factors reported was significantly associated both with Checklist motor scores and with scores from the Strengths and Difficulties Questionnaire.

Conclusions: Parents report a range of non-motor factors that they believe impact on their child’s motor performance. The prevalence of these factors as recorded on the Movement ABC-2 Checklist correlates highly with other formal measures of behaviour problems. They also have a strong association with reported motor difficulties.

HOME-BASED ACTION OBSERVATION AND IMAGERY TRAINING IMPROVES ACTIVITIES OF DAILY LIVING IN CHILDREN WITH DCD

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Introduction: Developmental coordination disorder (DCD) is characterised by poor motor coordination, which interferes with the ability to execute activities of daily living (ADLs). Combined action observation and motor imagery (AOMI) involves observing movement videos whilst imagining simultaneously the sensations of executing the same movement. Laboratory-based research indicates that AOMI can help improve movement coordination in children with DCD, but no previous research had investigated the efficacy of AOMI interventions for learning ADLs.

Objective: This study investigated the efficacy of a home-based, parent-led, AOMI intervention for learning ADLs in children with DCD.

Methods: Children with confirmed or suspected DCD (n=28), aged 7-12 years, were randomly assigned to either an AOMI intervention or a control intervention (both n=14). Participants executed the following ADLs at pre-test (week 1), post-test (week 4), and retention test (week 6): shoelace tying, cutlery use, shirt buttoning, and cup stacking. Task completion times and movement techniques were recorded, and participants' eye movements were monitored.

Results: The AOMI intervention produced significantly faster task completion times than the control intervention at post-test for shoelace tying, and significantly improved movement techniques for both shoelace tying and cup stacking. Importantly, for children who could not tie shoelaces at pre-test (n=9 per group), 89% of those following the AOMI intervention learnt the skill by the end of the study, compared to only 50% of those following the control intervention. Analysis of the eye movement data is ongoing.

Conclusion: Home-based, parent-led, AOMI interventions can aid the learning of complex ADLs in children with DCD.

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Introduction: We know that genetics plays a role in why some children develop DCD, as we see in other neurodevelopmental conditions. Unlike equally common disorders such as dyslexia, there has been little research into the underlying biology of DCD, and the specific genes and molecular pathways remain unknown.

Aims: To present the first genome-wide association study (GWAS) to examine the genetic basis of early motor coordination in the context of motor difficulties.

Methods: Using data from the UK Avon Longitudinal Study of Parents and Children (ALSPAC) (N=4542, 2183M/ 2359F) we derived an overall measure of coordination using elements of the Movement ABC Test (age 7). Individuals were excluded if they reported visual or physical disability that may explain coordination difficulties, showed evidence of intellectual disability, were missing data from the Movement ABC, or did not have genotyping data. The GWAS method looks for shared genetic variations, in this case, that are more common to individuals with poor motor coordination. These shared genetic variants fall within genes which then allows us to identify biological mechanisms.

Results: Three genomic regions showed suggestive association and contained five candidate genes, some of which are implicated in neuronal processing.

Conclusions: This study provides a direct window into the biology of motor coordination difficulties and DCD. We identified potential biological drivers of DCD; a crucial first-step towards understanding this common yet neglected neurodevelopmental condition. This study establishes genetics as a useful method through which to unravel the biological basis of DCD.

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Background: Learning a new motor skill partly depends on the capacity to internally represent motor actions, a mechanism considered to be impaired in children with DCD. To increase our understanding of this impairment we used an automatic imitation (AI) experiment. AI refers to the phenomenon that movement execution is facilitated by observation of a compatible and impeded by an incompatible movement. Reduced AI in children with DCD would suggest a deficit in a low-level motor learning process related to the so-called mirror neuron network.

Objectives: AI was tested in children with DCD with the hypothesis that their motor actions would be less affected by simultaneously observing incompatible stimuli. Additionally, sources of motor interference were examined using EEG.

Methods: Seven participants with DCD and seven typically developing children (age range: 10-14) were instructed to lift their index or middle finger in response to a letter cue while observing a hand doing the same movement (congruent condition) or the opposite movement (incongruent condition). EEG was recorded to examine event related potentials related to different levels of motor interference.

Results: The preliminary results indicate similar AI effects in both groups with increased reaction times in the incongruent condition as opposed to the congruent condition. In addition, lower P3 amplitudes were found in the DCD group, which may suggest lower engagement in the cognitive processes related to distinguishing the externally triggered motor representation and the executed motor action.

Conclusion: Based on these preliminary results AI seems to be preserved in children with DCD.

DO CHILDREN WITH DCD PERCEIVE SUCCESSIVE BODY POSTURES AS MOVEMENT? AN EEG FREQUENCY TAGGING STUDY

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Background: Research indicates various problems with internal modelling in DCD. Partially related to this, some studies have found neurological evidence for impairments in the action observation network. Nonetheless, interventions that strongly rely on these mechanisms, such as motor imagery or observational learning, appear to facilitate motor learning in DCD.

Objectives: In this study we aimed to gain a deeper understanding of the action observation processes in children with DCD. To this end we examined to what extent their brain perceives a sequence of static body postures as biological movement.

Methods: Children were instructed to observe two types of cyclical sequences of body postures: one with fluent apparent motion, the other non-fluent. Using EEG frequency tagging periodic brain responses were objectively related to the repetition of body movements (presented at 1.67 Hz) and the repetition of posture sequences (at 0.83 Hz) in the EEG frequency spectrum.

Results: Preliminary data of seven children with DCD and seven age-, gender- and handedness-matched typically developing children (age range: 10-14) suggest that children with DCD bind successive body postures into a continuous movement percept to an equal extent as their peers, indicated by similar neural responses at the frequency of body movement repetition (1.67 Hz).

Conclusion: Using a direct neurological measure for action perception, it was found that children with DCD do perceive successive static body postures as sequences of biological motion. This strengthens action observation as a tool for motor learning in this population.

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Introduction/Background: Developmental coordination disorder (DCD) is a heterogeneous disorder. Beside motor impairments, children with DCD often exhibit poor visual perceptual abilities and executive functions.

Aims/Objectives: This study aimed at characterizing DCD clinical profiles through descriptive and statistical approaches.

Methods/Approach: Fifty children with DCD and 31 typically developing (TD) peers (7-11 y.o.) underwent a comprehensive neuropsychological (15 tests) and motor (3 subscales of the MABC-2) assessment. Proportion of failure was described for each measure. Hierarchical agglomerative and K-means iterative partitioning clustering analyses were performed to distinguish subgroups present among the complete sample of children (DCD and TD) in a data-driven way.

Results/Discussion: Large to moderate proportions of children with DCD experienced altered executive functions (92%), praxis (meaningless gestures and postures, 68%), attentional (52%), visual perceptual (46%) and visuomotor (36%) abilities. Clustering analyses resulted in five subgroups, characterized by: (i) generalized impairments (8 DCD), (ii) poor balance (static/dynamic), planning and attentional skills (15 DCD and 1 TD), (iii) poor manual dexterity, cognitive inhibition, and specific visual perceptual abilities (11 DCD), (iv) poor manual dexterity and cognitive inhibition (15 DCD and 5 TD), and (v) typically developing (25 TD and 1 DCD).

Beside subtle differences, the motor and praxis measures did not enable to discriminate between the four subgroups of children with DCD. The subgroups were however characterized by specific reduced cognitive or perceptual abilities, suggesting that they might be underlain by disruptions in distinct brain networks.

Conclusions/Relevance to “DCD in the Real World”: These results highlight the importance to assess exhaustively the cognitive and perceptual skills of children with DCD.

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CANADA

HOW DEVELOPMENTAL COORDINATION DISORDER AFFECTS DAILY LIFE: THE ADOLESCENT PERSPECTIVE

Introduction: Despite considerable research on the impact of developmental coordination disorder (DCD) in childhood, few studies have focused on the implications of this disorder in adolescence. In order to inform clinical care and determine what supports and services are needed during the teen years, it is necessary to better understand what life is like for adolescents with DCD and the challenges they face.

Objectives: This study addressed the question: “In adolescents with DCD, what are their perspectives about how DCD affects their daily life?”

Methods: Participants were recruited from a DCD clinic database of adolescents who were formally assessed by a developmental pediatrician and occupational therapist and formally diagnosed with DCD. Nineteen semi-structured interviews of adolescents with DCD (13-18 years; 14 male and 5 female) were conducted over Zoom from October 2020 to June 2021. Interviews were audio-recorded, transcribed verbatim, and analyzed using an interpretive description approach, supplemented with analytic procedures from thematic analysis.

Results: We summarized the data from the voices of teens into four overarching themes: (1) Through the years; (2) Standing out, left out, opting out; (3) Rising into Resilience; and (4) Help me to be me. Sub-themes further clarify the experiences and needs of teens with DCD.

Conclusions: Few services currently exist for adolescents with DCD. Insights gained from this study will provide client-centred evidence to advocate for occupational therapy intervention for adolescents with DCD, and guide recommendations for clinical care and community support to meet the needs of this under-served population.

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Background: Developmental Coordination Disorder and Attention-Deficit/Hyperactivity Disorder co-occur in up to 50% of cases and involve several overlapping executive functioning and motor difficulties. It is crucial to understand the unique contributions of cognitive and motor abilities in DCD and ADHD for proper differential diagnosis and support.

Objectives/Method: Groups of children diagnosed with ADHD (no medication taken 24 hours prior to their test session; n = 12), and/or those at risk for DCD (DCD-risk; n = 20) completed various cognitive and motor tasks with and without simultaneous self-paced walking. Participants were extracted from a larger dataset which also included typically developing children (n = 94). Cognitive tasks included counting, number recall and animal naming, and motor tasks such as button fastening. Several gait parameters (e.g., velocity, stride length, stride time, cadence) were measured in walking-only and dual-task conditions.

Results: The DCD-risk group fastened significantly fewer small and large buttons than the ADHD group while seated, and fewer small buttons while walking. The dual-task costs on gait did not differ between the ADHD and DCD-risk groups. However, the control group walked significantly faster (i.e., step time; cadence) while fastening more buttons than other groups.

Discussion: The results indicated complex fine motor tasks might be useful alone for differential profiles of children with ADHD and DCD. It is possible the walking ability is similarly automatized in children with DCD and ADHD in childhood, as opposed to children of typical development. Overall, children with ADHD and risk-for-DCD have similar gait in the real-world.

CORTICAL BRAIN CHANGES IN CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER AFTER CO-OP INTERVENTION

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Introduction: Cognitive Orientation to Occupational Performance (CO-OP) intervention is one of the recommended treatments to increase motor function of children with developmental coordination disorder (DCD). CO-OP uses a task-specific, cognitive-based, problem-solving approach to facilitate motor skill acquisition. While the precise mechanism underlying the intervention is unknown, recent studies have shown changes in brain structural and functional connectivity with this therapy. However, it is unknown whether CO-OP can alter brain structure.

Objective: The objective of this study was to compare cortical grey matter volume in children with DCD before and after CO-OP intervention.

Methods: This study was part of a larger randomized waitlist-controlled trial examining brain changes and motor outcomes after CO-OP intervention in children with DCD (8-12 years). MRI was conducted before and after CO-OP, provided once weekly for 10 weeks. Twenty children with high quality pre- and post-intervention structural MRI scans for voxel-based morphometry were included in this study. Changes in cortical grey matter volume were assessed using repeated measures ANOVA.

Results: After intervention, grey matter volume significantly decreased in the right posterior cingulate gyrus, right middle cingulate, and right superior frontal gyrus. These regions have been associated with self-regulation, cognitive and motor connections, and executive functioning respectively.

Conclusion: Findings suggest that CO-OP intervention may facilitate brain maturation in targeted grey matter brain regions, possibly due to synaptic pruning. This study provides further neuroscientific evidence for the effectiveness of CO-OP intervention, which will support advocacy efforts to provide CO-OP as standard of care for children with DCD.

STABILITY OF MOTOR FUNCTIONING IN EARLY CHILDHOOD: EVIDENCE FROM A LARGE PROSPECTIVE COHORT

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Introduction: Improvements over time among children with poor motor functioning appears to be common. However, much existing research does not account for regression towards the mean (RTM).

Methods: For this current study, we examine measurement stability among 589 children aged 4-5 years. As a part of the CATCH study, we administered the Movement Assessment Battery for Children 2nd Edition annually to 269 children initially scoring above and 252 at or below the 16th percentile. We measured agreement between year 1 and year 2 standard scores using Pearson correlation and derived expected regression towards the mean (RTM). We then regressed follow-up on baseline scores, controlling for relative age, sex, and exact interval between assessments. Finally, we performed a small illustrative simulation.

Results: The mean score in the poor-coordination group rose from 5.6 (SD=1.5) to 7.2 (SD=2.8). Year 1 and year 2 scores were correlated at $r=0.66$, corresponding to predicted RTM in the MI group of 1.56, close to the observed change of 1.57. Degree of change was not associated with time between assessments.

Conclusions: Overall, the observed improvements in motor functioning were consistent with measurement error. The stability of motor functioning may be greater than it appears from past research and reported functional improvements in some studies may be illusory. Future work will examine the impact of measurement error across four years of motor proficiency data.

CHARACTERIZING YOUNG CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER USING REPEATED MOTOR ASSESSMENT

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Introduction: Developmental Coordination Disorder (DCD) is a neurological disorder characterized by persistent deficits in motor skills. DCD arises in early childhood, however, identifying DCD at this age presents several challenges. It is recommended that a diagnosis of DCD is made only after repeated motor assessments confirm motor delay, however, very few longitudinal studies of young children with DCD have been conducted and no studies have characterized young children with DCD using repeated motor assessments.

Methods: The purpose of this study was to describe characteristics of children identified as having probable DCD (pDCD) based on an average motor skill score across up to four annual assessments, using the Movement Assessment Battery for Children-2nd edition (MABC-2). At baseline, 288 (49%; 57% male) children 4-5 years old were classified as pDCD having scored at or below the 16th percentile on the MABC-2, while 301 (51%) children scored above the 16th percentile and were classified as typically developing (TD).

Results: The results of reclassifications based on average MABC-2 scores of at least two four waves of data (up to four) found the sample being redistributed to 144 pDCD (26%; 70% male) and 403 TD (74%; 53% male) groups. Children with pDCD had lower IQ (pDCD=98.6, TD=105.8; $p<.001$) scores and parents reported more problems with self-care, school, and leisure time activities ($ps<.001$).

Conclusions: This study is the first to describe young children with DCD based on an average motor skill score and provides important methodological considerations regarding DCD group allocation in the early years.

LONGITUDINAL EXAMINATION OF PHYSICAL ACTIVITY WITH AND WITHOUT DCD ACROSS EARLY CHILDHOOD

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Introduction: It is theorized that the physical activity (PA) deficit between children with and without DCD emerges and widens over childhood as active pursuits become more motorically demanding. The purpose of this study was to investigate the daily moderate-to-vigorous PA (MVPA) levels in children with and without DCD across 3 years, starting at preschool age (4-5 years) to examine if this deficit emerges across early childhood.

Methods: Children (n=589) 4 to 5 years of age were recruited and completed 4 annual assessments as part of the Coordination and Activity Tracking in CHildren (CATCH) study. At baseline children completed the Movement Assessment Battery for Children-2, with children scoring ≤ 16 th percentile considered to be at risk for DCD (DCDr). Average daily MVPA was measured annually over 7-days using ActiGraph accelerometers. Mixed effects modeling was used to determine if DCDr predicts MVPA over time, controlling for baseline age and sex.

Results: Five hundred and fifty-nine children (n=267 DCDr, n=319 male) were included in the analysis. Children with DCDr (estimate=-3.3, p=.02) and girls (estimate= 13.8, p<.01) were less active across early childhood. There were no significant interaction effects, indicating that trajectories of MVPA between groups and sexes were consistent across time.

Conclusions: A deficit in MVPA for children with DCD is present and persists across early childhood. This finding highlights the importance of early PA interventions to help minimize the risk of inactivity and associated health risks in young children with DCD.

A LONGITUDINAL INVESTIGATION OF CHILDREN AT RISK FOR DCD: A DESCRIPTION OF THE “Canadian Coordination and Activity Tracking in CHildren (CATCH) Study”

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Background: Past studies have found that children with Developmental Coordination Disorder (DCD) engage in less physical activity than typically developing (TD) children. This “activity deficit” has resulted in children with DCD being less physically fit and more likely to be overweight or obese. Unfortunately, most of the DCD research has been limited to cross-sectional designs, leading to questions about the stability of motor impairment and the complex relationships among motor ability, inactivity and health outcomes. Of the few longitudinal studies, determining precedence amongst these factors is difficult because study cohorts typically focus on mid-to-late childhood. By this age, both decreased physical fitness and obesity are often established.

Aim: The purpose of the Coordination and Activity Tracking in CHildren (CATCH) study was to examine the pathways connecting DCD, physical activity, and health across early childhood. We are proposing to develop a symposium for the DCD 14 conference that first aims to describe our 4-year prospective cohort study (N=589, 4 & 5 years at baseline); with subsequent abstracts examining the stability and impact of multiple assessments of the Movement Assessment Battery for Children 2nd Edition and investigating the impact that DCD and parental influences have on physical activity behaviours across the early childhood period.

Discussion: These results from the CATCH cohort will provide a clearer understanding of stability of motor impairment in early childhood and pathways between DCD and physical inactivity necessary to determine the types of interventions children with DCD may require in the real world.

THE PERCEPTIONS AND CONCERNS OF PARENTS WHO HAVE A CHILD WITH DEVELOPMENTAL COORDINATION DISORDER.

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Introduction: DCD affects 5-6% of school-aged children, impacting the individual and their family. Although there are multiple studies on ramifications for the individual, little is known about the perceptions and concerns of parents of children with DCD, particularly within a New Zealand context.

Aims: To explore parents' perceptions and concerns when raising a child with DCD.

Methods: The study used an interpretive description methodology, informed by an occupational perspective. Nine mothers of a child with DCD aged 5-12 years were recruited through a national DCD support group. Data were gathered using in-depth, semi-structured, telephone interviews exploring participants' perceptions of the child's participation in occupations, the impact on the family, and strategies used to support the child. Meaningful units within interview transcripts were coded and themes were derived.

Results: Parents were aware from a young age that their child was different, noticing delays in motor skills, difficulties with schoolwork, and concerns over social participation and emotional wellbeing. They used practical strategies to support skill development and structure their everyday occupations at home and in the community. A perceived lack of knowledge of DCD amongst health care and education professionals meant participants worked hard to advocate for their child.

Conclusions: The findings align with international studies, highlighting the need to acknowledge parents' concerns and for interventions which align with those concerns. Increased understanding among health and education professionals and other parents is needed to mitigate harm, such as restricted participation in occupations, social isolation and depression, particularly within New Zealand contexts.

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Introduction: Developmental coordination disorder (DCD) is a common but under-recognized neurodevelopmental disorder that affects motor function and interferes with activities of daily living, school performance, and leisure pursuits. Families in Canada and around the world often struggle to access diagnostic and rehabilitative supports and services to address their child's needs. To advocate for change, it is necessary to understand parents' perspectives of the impact of DCD and the needs of their children.

Objectives: (1) to better understand the physical, emotional, and financial impact of DCD, what services/supports families have accessed for their child, and parent-identified needs and priorities; (2) to advocate for policy changes for improved access and availability of services.

Methods: An on-line questionnaire was launched in November 2021 to Canadian parents of children with DCD. Preliminary results have been descriptively analyzed.

Results: To date, 234 questionnaires have been completed, with representation from across Canada. Families reported waiting 1-4 years or more for a diagnosis; 47% had to pay privately. Access to school-based therapy was inconsistent across provinces. More than half of children are not currently receiving therapy, primarily due to lack of funding. Concerningly, 93% of families reported concerns about their child's social-emotional health.

Conclusions: Initial results suggest limited access and funding for diagnostic, therapeutic, and school-based supports and services in most provinces. Results of this study will be compared and collated with similar studies conducted in Australia, USA, and UK; findings from these studies will facilitate international awareness and advocacy for children and families living with DCD.

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Background: While most children have developed effective handwriting by secondary school age, some, including those with DCD, have handwriting difficulties that hamper educational achievement. When difficulties are significant, alternatives may be offered for classwork, such as typing. School and Occupational Therapy (OT) staff may be involved in the assessment and teaching of handwriting and typing skills. However, little is known about how handwriting and typing is supported in secondary school.

Aims: To survey school and OT staff in England to identify current school practice in the assessment and teaching of handwriting and typing skill and the policies that are in place to guide this.

Methods: Two parallel online questionnaires were developed for school and OT staff. Open and closed questions asked about: training; the school context; relevant school policies; and practical approaches to assessment and support.

Results: Data were analysed from 34 school and 38 OT staff. The majority of school staff reported that there were no school policies referencing handwriting or typing. Classroom practice and interventions were varied. Few schools had universal practices for identifying handwriting difficulties and supporting typing, and school staff had little training in these areas. The timing of transition to typing was a common concern. OT staff provide advice on handwriting but noted the lack of suitable typing assessments.

Conclusions: Findings highlight the complexities of assessing and supporting handwriting and typing in students. Evidence-based guidelines and further research examining whether, when and how to introduce typing as an alternative to handwriting would support best practice.

Symposium

A longitudinal investigation of children at risk for DCD: A description of the Canadian Coordination and Activity Tracking in Children (CATCH) study

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Background: Past studies have found that children with Developmental Coordination Disorder (DCD) engage in less physical activity than typically developing (TD) children. This “activity deficit” has resulted in children with DCD being less physically fit and more likely to be overweight or obese. Unfortunately, most of the DCD research has been limited to cross-sectional designs, leading to questions about the stability of motor impairment and the complex relationships among motor ability, inactivity and health outcomes. Of the few longitudinal studies, determining precedence amongst these factors is difficult because study cohorts typically focus on mid-to-late childhood. By this age, both decreased physical fitness and obesity are often established.

Aim: The purpose of the Coordination and Activity Tracking in Children (CATCH) study is to examine the pathways connecting DCD, physical activity, and health across early childhood. This panel will describe our 4-year prospective cohort study (N=589, 4 & 5 years at baseline), examining the stability and impact of multiple assessments of the Movement Assessment Battery for Children 2nd Edition and investigating the impact that DCD and parental influences have on physical activity behaviours across the early childhood period.

Discussion: The results from the CATCH cohort will provide a clearer understanding of stability of motor impairment in early childhood and pathways between DCD and physical inactivity necessary to determine the types of interventions children with DCD may require in the real world.

Key Message: The CATCH Study is a unique longitudinal cohort study with much to be gleaned.

Symposium:

Co-ordinating comprehensive care for children with motor difficulties: Operationalizing DCD evidence for pediatric occupational and physical therapists in a large hospital system

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This panel presentation will describe our experience with founding and growing a comprehensive DCD program over 6 years, including successes and struggles with knowledge translation, quality improvement, and service delivery.

Background: DCD begins in early childhood but remains poorly understood and highly under-recognized by healthcare professionals. We founded a team in 2016 to improve care for this population, and quickly realized that we would need to start with increasing identification of these children, followed by implementing evidence-based intervention practices.

Objectives: We aim to describe our experiences in creating and implementing a comprehensive program for outpatient therapists to correctly identify and effectively treat children with DCD. Initial efforts were made to facilitate consistent screening for the disorder with the DCDQ, increase use of evidence-based assessments and interventions by therapists, improve education and collaboration with community physicians, and ultimately help children reach their goals.

Methods: Targeted efforts were devoted to translating knowledge for therapists in the areas of DCD awareness, screening, assessment, diagnosis, intervention, outcome measurement, and community engagement. Practitioners were educated on DSM-5 diagnostic criteria and were instructed to screen with the DCDQ³ during evaluations. Several algorithms were created to assist with differential diagnosis and triage patients to correct care pathways. All therapists were trained in the evidence-based Cognitive Orientation to daily Occupational Performance (CO-OP) approach in order to reduce variation and improve care. A CO-OP Club was designed to deliver physical therapy intervention in a group model and is being expanded into occupational therapy services this summer. **Results:** Our team has facilitated a 30% increase in use of the DCDQ during evaluations, an increase in DCD diagnoses treated at CCHMC, and CO-OP training for 100% of our OT/PT staff. The patients who completed CO-OP Club demonstrated significant improvements in client-chosen functional sports skills.

Conclusions: Focused efforts have increased identification of children with DCD and increased physician, educator, therapist and caregiver understanding of the disorder, its severity, and its natural course. Earlier identification and evidence-based intervention is providing improved function, participation, and patient/family satisfaction for the DCD population.