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Editorial: DCD12



Individuals who have difficulty coordinating movements are often unable to perform common, everyday age appropriate tasks. When this persistently impacts on their daily living, school or vocational activities and cannot be attributed to other disabilities it may be diagnosed in the DSM-5 as Developmental Coordination Disorder (DCD). Motor difficulties are noticeable in the early developmental period and can continue through to adolescence and into adulthood. DCD also co-occurs with other developmental disorders such as Autism Spectrum Disorder, Communication Disorders and Attention Deficit/ Hyperactivity Disorder, and is linked with social-emotional problems such as anxiety, depression and bullying.

This special issue contains papers based on work presented at the 12th International Conference on Developmental Coordination Disorder (DCD12) held between the 5th and 8th July 2017 in Perth, Western Australia at the Esplanade Hotel, Fremantle. Presenters were invited to submit their work to this special issue. With around 200 local, national and international delegates, DCD12 comprised a wide range of topics relating to DCD and its co-occurring disorders. This biennial conference highlighted the importance of multidisciplinary research, the influence of comorbid and associated cognitive and social-emotional difficulties, as well as low physical participation, and the implications of these for translation into practice. The papers included in this special issue reflect these broad aims, which were approached with a consideration of the developmental aspects and life-span outcomes for these individuals.

These proceedings include 13 papers which have been grouped into four sections; description, assessment, physical and psychosocial problems associated with DCD, and lastly intervention. The first two papers present very different methodologies when describing DCD. In their investigation of preschool age children, Houwen, Kamphorst, van der Veer and Cantell examined relationships between motor performance, executive functioning, and verbal ability of 119 3- to 4- year old children. The study revealed different skill profiles in children, offering useful insight into the potential value of early screening and intervention. In contrast, Reynolds, Billington, Kerrigan, Williams, Elliott, Winsor, Codd, Bynevelt and Licari used fMRI to investigate the mirror neuron system, a neurological network proposed to be impaired in children with DCD. Children with DCD were found to activate their mirror neuron system similarly to typically developing children, but displayed reduced activation in neurological regions associated with motor planning and attention.

Assessment remained a major area of interest with numerous papers presented at the conference. Three papers have been included in the proceedings. The first paper by Cantell, Houwen, and Schoemaker investigated whether the Dutch version of the Little Developmental Coordination Disorder Questionnaire (LDCDQ-NL) was valid and reliable for children aged 3 to 5 years. This was the case for 4 and 5 year olds but validity scores were low for 3 year olds. Three year old children were also the focus of the paper by Kwok, Mackay, Agnew, Synnes, and Zwicker who found that the Movement ABC-2 Test scores for three year old children born very preterm could reliably predict DCD at age 4.5 years. However, many false positives were identified. The Movement ABC-2 Test was also investigated by Zoia, Biancotto, Guicciardi, Lecis, Lucidi, Pelamatti, Carrozzi, Skabar, Sudgen, Barnett and Henderson who compared the performance on the test in Italian children aged 3 to 10 years with a similar sample of children from the UK who were part of the original standardisation sample for the Movement ABC-2. As 11 of the 27 tests produced differences between the two samples the authors recommended that different population norms should be determined to take into account cultural diversity.

An area that continues to attract interest are the problems associated with DCD. The proceedings include six papers that have investigated the physical, social and emotional difficulties of children with DCD Chivers, Rantalainen, McIntyre, Hands, Weeks, Beck, Nimphius, Hart and Sifarakas compared bone health of Australian adolescents with low motor competence (LMC) to an apparently healthy, age-matched sample. They found the boys, but not the girls, with LMC had less robust bones. They hypothesised this may be due to their lower weight bearing physical activity. Wright, Furzer, Licari, Thornton, Dimmock, Naylor, Reid, Kwan and Jackson examined the extent to which different variables influence physical activity participation, including physiological and psychosocial factors, along with parental support. The findings revealed that children with DCD have multiple physiological barriers, receive less logistical support, and report lower scores on psychological constructs that are predictive of physical activity involvement. Izadi-Najafabadi, Ryan, Ghafooripoor, Gill and Zwicker examined participation in children with DCD at home, school and in the

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community, considering both personal and environmental factors. They report that children with DCD participated less in school and community settings, and received less environmental support across all three settings. Karras, Morin, Gill, Izadi-Najafabadi and Zwicker compared responses from Kidscreen-52 and the Strengths and Difficulties Questionnaire to normative data and found that children with DCD and their parents also report lower health-related quality of life. The final two papers in this section focus on the Environmental Stress Hypothesis (ESH) which investigates the link between DCD and internalising problems. Mancini, Rigoli, Roberts and Piek carried out an integrative research review investigating the available research evidence for the complex pathways identified in the ESH. Few studies were identified and it was suggested that intervention studies may be a useful approach in investigating the pathways proposed in the model. Yao-Chuen, Kwan and Cairney added to this body of literature by investigating the pathways of the ESH in young adults aged 17 to 23 years, providing evidence for some of the pathways in the ESH.

The final section in the current proceedings includes two papers examining approaches to intervention. The first, by Oliveira, Rigoli, Kane, McLaren, Goulardins, Straker, Dender, Rooney and Piek examines the Animal Fun Program designed for children aged 4 to 6 years, providing evidence that the intervention assists in the development of key skills such as throwing and balance. Hands, Chivers, Grace and McIntyre investigated an adolescent exercise intervention program called AMPitup. This intensive long term exercise program was found to significantly improve and sustain a range of fitness outcomes in adolescents identified with movement difficulties.

As all papers submitted for this special issue were critiqued by at least two reviewers we would like to thank all of the reviewers who assisted with this process. We would also like to thank the team at RIDD for all the assistance they provided for this special issue.

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