



Evaluation of Attention Towards Motor Task in Children with Developmental Co-Ordination Disorder - A Pilot Study

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ABSTRACT

Motor task execution capability again included in the writing task. The ability of the child to copy down the letters from the blackboard and the ability to listen to the dictated word and coordinate the writing task along with the listening task to complete the note-taking process. Lack of motor task execution capability will exclude the child from green land play. Playing demands attention skill as well as motor co-ordination. We aimed to compare the level of attention among children with and without DCD during their functional activities that demand motor performance. Ten children with and without DCD were included in the study. Their motor performance was assessed with the Movement Assessment Battery for Children (MABC), and a self-reported questionnaire evaluated attention during the tasks of the MABC. All children with DCD had higher MABC impairment scores and lower attention scores than their peers. It has been documented that children with DCD were less attentive to movements than their peers, and the positive reinforcement can modulate their performance by the parents or therapist.

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demic performance ([Dewey et al., 2002](#)).

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INTRODUCTION

Their clumsiness marks children with developmental co-ordination disorder in executing a motor task. However, learning skills in the early developmental period is based on the motor skill execution capability of the child. During the early years, even the playing task will demand motor skill execution capability, as the child gets older, their handwriting speed and legibility of written words will decide his aca-

Children with developmental co-ordination disorder will have impaired motor skill execution. These children experience depression and social isolation. Evaluation of school population resulted in 5-6% of children shows the incidence of DCD. By WHO and APA definition to identify children with DCD, this association helped millions of people to understand the impact of DCD, and it educated people about the motor co-ordination defect. It has been quoted that there is a need for early identification and interventions for children with DCD ([Yoon et al., 2006](#)).

The prevalence of developmental co-ordination disorder is increasing worldwide, as they are connected with the children’s quality of life. They face difficulties in action planning, organizing, adapting to movements and learning new skills, which affects the daily living activities, play, and academic performance. The DCD prevalence in the United States is 5-8%, 5.6% in Egypt, 5.7% in Greek and 1.8% in the United Kingdom and 5.9% in Canada, 30% in Brazil and India it is found to be 1.6% in West India, 21.6% in Karnataka. In Tamil Nadu at Kattupakkam, it was found to be 3.22%, and Kattanlulathur had 1.37% (Stephenson and Chesson, 2008).

To identify, diagnose and treat, there is a need for a gold-standard assessment tool to categorize these children as DCD and to design the appropriate rehabilitation techniques to help these children to acquire the motor skill task demands. Till date, there is no single assessment tool to score the child’s attention in a perceptual-motor task, and the therapist uses a lot of non-standardized methods to analyze the child with DCD (Cantell et al., 1994). The current study aims in analyzing the attention towards motor task execution in children with DCD.

Methodology

After getting informed consent signed from the parents of children with DCD, ten children with DCD were recruited from therapy centers in and around Mudichur. Control group was enrolled with ten typically developing children from primary school. Children were identified and recommended to participate in the study by the head of the therapy centres. Heads were approached by mails, and the details of the study and the need to conduct the study for these children were explained in the mail by the primary researcher.

In the first step, The DCDQ is administered, which is rated by the parents of children with DCD using a 5-point Likert scale. This parent questionnaire is used to identify children with motor problems. The items assessed in the questionnaire included ball activities, running and jumping, handwriting, etc. in the second stage, The CBCL - Child Behavior Checklist is used for children aged 4–18 years of age. It is a parent-reported questionnaire, was used to analyze the parent’s perspectives, and they have to rate their child’s psychological adjustment and attention problems. Parents were assisted by an outstanding educator to rate the behavioural problems experienced by their children with DCD. 3-point scale (0 if not true, 1 if somewhat true or sometimes true, and 2 if very true or often true) was used to rate the child’s difficulty Figure 1.

A higher score denotes enhanced problems. Syn-

dromes evaluated include syndrome of Withdrawal, Somatic Complaints, and Anxious/Depressed. Few children have externalizing Problems. In the current study, thought Problems and Attention Problems were examined. The CBCL was given to parents, and after children were evaluated by the primary researcher, within 1–3-day interval, Parents completed and returned the CBCL without getting the feedback of motor tests’ results conducted by the primary researcher. Statistical analysis was done using SPSS 21.

RESULTS

Table 1: Demographic profile and CBCL score of participants

Characteristics	DCD	NON-DCD	P-value
Boys	5	7	
Girls	5	3	0.97
Total	10	10	
CBCL Score Attention	60.21	40.55	<.001

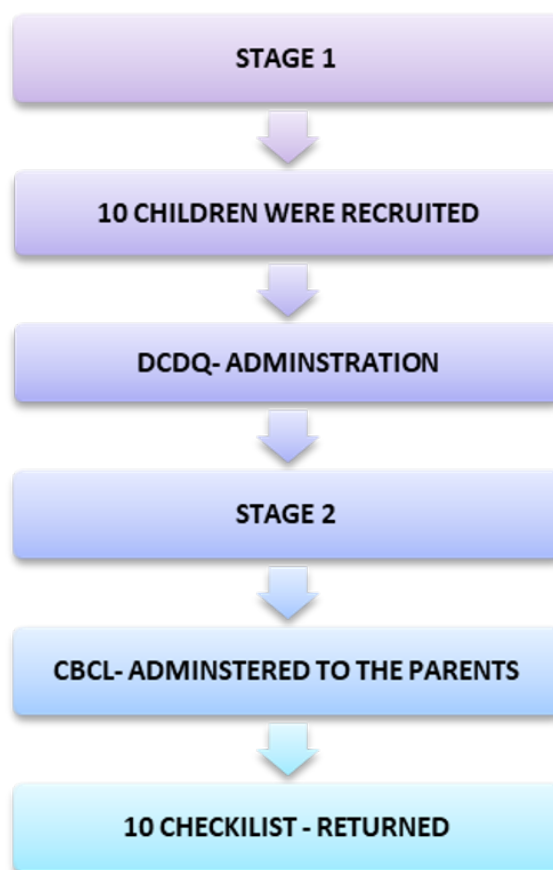


Figure 1: Flow chart of sampling procedure

DISCUSSION

We found that children with DCD have a specific psychosocial characteristic, they experience a multitude of Social Problems, Attention Problems, and other associated Behavior when engaged into functional tasks that demand their motor skill to be operated (Table 1). Previous researchers have concluded that clumsy children had poor social skills, and they experience low peer group interaction and poor relationship with people (Chow and Henderson, 2003).

They are prone to cardiovascular disorders. Many studies indicated that DCD children are at risk for Obesity and other associated problems. The results of this study showed that when comparing the typically developing children with a DCD child experiences withdrawn behaviour and associated attention defect, this makes the children isolated from the peer group and these behaviour influences academic performance of these children (American Psychiatric Association, 2000).

There is a definitive link between attention and motor performance; however, the groundwork of the neurological machinery were not systematically implicated. Researchers proved that Neuro-imaging studies within hale and hearty persons encompass intending to deliver signals and receive signals from multiple brain regions and networks and these regions were regularly facilitated by attention tasks (Sankar et al., 2020).

These comprise the visual, left parietal and frontal (primary motor) cortices, the prefrontal regions, and frontoparietal network. Majority of the functional magnetic resonance imaging in the direction to demonstrate that subarea 4p surrounded by the primary motor cortex was noticeably occupied in the control of attended action. Some of these regions that are responsible for attention are also important for motor control (e.g, the primary motor, parietal, and prefrontal cortices). Disruption in these areas might result in both mental and movement disorders (Johansen-Berg and P., 2002).

Indeed, further neuroimaging and neurophysiological studies in children with DCD are necessary to confirm this postulation (Pessoa et al., 2003). Our results showed that children with DCD are at higher risk of having attention problems and there is a need for a consistent assessment tool to identify the attention centres while executing the specific set of motor task appropriate for the different age group of children with DCD.

Available assessment tools BOTMP and the MABC do not identify the same children with developmental

movement problems, and further, they are associated with different characteristics in the problems of attention. The therapist should assess the attention towards motor function, and there is a need to device appropriate treatment goals and intervention.

CONCLUSIONS

This is the first pilot study investigating the attention of children identified as DCD, and there is a need for analyzing the attention level of children with a large sample size to generalize the findings.

Conflict of interest

The authors declare that they have no conflict of interest for this study.

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