

## **Diagnosing developmental coordination disorder**

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Children showing difficulty carrying out routine actions, such as getting dressed, playing with particular types of games, drawing, copying from the board in school and even typing at the computer, could be suffering from developmental coordination disorder (DCD), and not necessarily from ADHD or other more familiar disorders, points out Prof. Sara Rosenblum of the Department of Occupational Therapy at the University of Haifa, whose new study set out to shed new light on DCD. "In quite a few cases, children are not diagnosed early enough or are given an incorrect diagnosis, which can lead to frustration and a sense of disability. It can even result in a decline that requires psychological therapy," she explains.

A person with DCD suffers from childhood and throughout <u>adult life</u>. Unlike various illnesses or trauma, says Prof. Rosenblum, this disorder is expressed in the inability to control the process of carrying out a particular motor task, consolidate it in memory and repeat the same task automatically. "Simple tasks, such as closing buttons, tying laces, writing or riding a bicycle, which for healthy people become automatic, are difficult to carry out for people with DCD. When those children grow up, they are more likely to have trouble with temporal and spatial organization and have difficulty estimating distance and speed, which could prevent them from learning to drive successfully and even to ride a bicycle," she adds.

Since the deficit is neural-based, meaning that it is founded in atypical brain activity, it is particularly difficult to diagnose in children. Going



undiagnosed often exacerbates the individual's sense of <u>frustration</u> and shame, and they are therefore more likely to grow up to be introverted adults. The current study, conducted by Prof. Rosenblum and Dr. Miri Livneh-Zirinski of Kupat Holim Meuhedet (one of Israel's <u>public health</u> plans), set out to identify DCD in children by means of a simple and <u>noninvasive test</u> of writing tasks.

Two sample groups participated in the study: 20 children diagnosed with DCD and 20 children with no known symptoms of the disorder. Each participant was asked to write down their name, write out the alphabet and copy a full paragraph. The tasks were conducted using a special electronic pen and pad and a program developed by the researcher that shows objective measures that relate to the temporal and spatial characteristics of the writing, and pressure implemented on the pad. These measures can be analyzed with regard to motor, sensory and cognitive performance by taking note of elements such as in-air time per stroke, force of writing, and the time taken to write each letter.

The study found that the two groups showed very different characteristics in various parameters. Those with DCD took up to three times longer than the other children writing each letter; they also held the pen in the air for longer; and they placed more pressure on the pad with the pen. According to Prof. Rosenblum, these results give further emphasis to the suffering that children with DCD undergo in the classroom and any time they are required to complete a writing task.

"Children with DCD are 'transparent': they have no physiological or intellectual deformities, and in many cases, they are above average in their intelligence. But they are not able to complete tasks that require coordination between motor, sensory and cognitive functions. Our study comes to show how a simple everyday task can be used to diagnose individuals with DCD, and subsequently enable them to get the necessary treatment and guidance with <u>occupational therapy</u>," concludes Prof.



Rosenblum.

## Provided by University of Haifa

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