

Motor Learning Deficits in Children with DCD

In addition to poorly controlled movements, children with DCD exhibit limited movement repertoires, lacking both adaptability and flexibility in their motor behavior. This, along with the variability and inconsistency seen in their motor performance, suggests difficulties in motor learning processes. Evidence from sub-typing and other research would suggest that, although some children with DCD exhibit problems primarily in execution and control of movements, others have difficulties related to motor planning processes.

As has been previously described, children with DCD demonstrate movements that are inaccurate and lack fluency as they are unable to accurately correct their movement patterns through error detection or feedback. Although these children may achieve motor milestones within normal time limits, they have difficulties learning new motor skills. They fail to see the similarities between motor tasks and thus, are unable to transfer learned skills from one activity to a closely related activity. They also experience difficulty generalizing from one context or situation to another. Both of these processes reflect an early, more cognitive stage of motor learning. According to motor learning theory, as skills are learned, feedback requirements lessen and change with proprioceptive and kinesthetic feedback relied on more than visual input. Children with DCD continue to rely predominantly on visual information, as if they were still in the early stages of motor learning. As a result, their motor performance is sometimes more similar to that of younger children than to that of age peers.

Children with coordination difficulties have also been described as repeating tasks the same way over and over again, regardless of their success with the task. They appear to have difficulty understanding the demands of a task and its component parts, interpreting environmental cues and selecting the best motor response for a task. As a result, they do not effectively use the feedback originating from knowledge of their past performance to prepare for upcoming actions (anticipatory preparation) and they have difficulty adapting to situational demands. It has been postulated that children with DCD might attend to the wrong cues and not to the more salient aspects of the feedback available. Others have suggested that the problem might lie in a failure of children with DCD to use anticipatory control strategies for motor tasks; as a result, they might have to rely heavily on a feedback or closed loop strategy to control the movement.

In summary, children with DCD have difficulties with error detection and movement correction during the execution of motor skills. This is especially evident when motor tasks are complex and involve spatial uncertainty.

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