



Information about Fine Motor Impairment

Fine motor skills consist of movements of small muscles that act in an organized and subtle fashion, for instance, the hands, feet, and muscles of the head (as in the tongue, lips, facial muscles), to accomplish more difficult and delicate tasks. Fine motor skills are the basis of coordination, which begins with transferring from hand to hand crossing the midline when aged 6 months. Examples of fine motor activities are writing, sewing, drawing, putting a puzzle together, imitating subtle facial gestures, pronouncing words (which involves coordination of the soft palate, tongue, lips), blowing bubbles, and whistling. Many children who have difficulties in their fine motor skills also have difficulties in articulating sounds or words.

- **Muscular strength** refers to the intensity of the muscle contraction exerted voluntarily that may be required to carry out an activity.
 - ◊ Hypertonic children may appear strong and muscular. Instead of softly caressing someone on the face, they may involuntarily slap the person when they are attempting to show affection. The same occurs while giving a hug, which to others may feel more like a squeeze or like being physically crushed in the child's unintentional hypertonic grip.
 - ◊ Hypotonic children have diminished muscular strength and appear floppy or scrawny with thin arms, forearms, and legs. Hypotonic children cannot apply much pressure in a handshake; therefore, their handshake feels weak. They fatigue easily and claim to be unable to carry out simple tasks. For example, they may write with only thin lines and barely visible traces, and the pencil may slip out of their hand too easily.
- **Motor planning** consists of the ability of children to imagine a mental strategy to carry out a movement or an action; for instance, how to get on top of a table, how to move from point A to point B and overcome some obstacle, how to execute a dance step, or learning how to skip.
 - ◊ Most of the time in unaffected children, this function is achieved intuitively and without conscious planning. However, when children have difficulties in motor planning, they carry out movements using odd strategies; for instance, trying to reach something that is out of reach without getting up from a previous position. Another example is a child trying to get down from a chair without moving the trunk and preparing himself to go down and instead just letting himself fall. When these problems exist, parents notice that the child may fall just standing, or such children frequently fall from a chair or stool. The child seemingly lacks the intuitive ability to plan how to effect a movement.
- **Sequencing and speed of movements** involves the order in which movements should proceed one after the other to accomplish a desired goal. This order is mostly unconscious or intuitive. When children try to manage a complex motor act or imitate something that has been modeled, their ability to do a series of movements may be compromised. These children often have problems in other activities that might require sequencing, such as in reading, writing their ideas, or even continuous speech.
- **Sensory integration** refers to functioning of the brain, ie, how it manages input and produces output. Outputs include motor responses.
 - ◊ The central concept is that children may struggle to integrate sensory input (e.g., visual, auditory, tactile, and proprioceptive cues) and develop aversions (e.g., to being touched, to being exposed to new sounds). Also, children may become overstimulated in any of these sensory channels, and their behavior and motor performance deteriorate in circumstances of overstimulation. Each child has a unique profile of responses to sensory stimuli. Children with motor difficulties often have problems in the integration of sensory input, which make them vulnerable to problems resulting from sensory stimulation.
- Children with difficulties in motor skills often perform movements slowly as a result of their difficulty in organizing and coordinating motion. They may also rely on visual cues to perform the movement (e.g., in handwriting) more than other children do. The necessity to view the movement slows the performance.
- Few groups have examined the prevalence of motor skills disorders in an open population. Approximately 4-6% of children of school age in the United States struggle with motor difficulties to the degree that causes concern to them and those around them.



Information about Disorders that can impact Fine Motor Skills

Dyspraxia

Dyspraxia is a term that refers to a specific disorder in the area of motor skill development. People with dyspraxia have difficulty planning and completing intended fine motor tasks. It is estimated that as many as 6% of all children show some signs of dyspraxia, and in the general population, about 70% of those affected by dyspraxia are male. Dyspraxia can affect different areas of functioning, varying from simple motor tasks such as waving goodbye to more complex tasks like brushing teeth.

- Babies with dyspraxia may avoid crawling and rolling over, and may resist tasks involving motor skills. As they get older these children are prone to:
 - ◊ Difficulty with eye movements — they may move the whole head instead of just the eyes
 - ◊ Difficulty using eating utensils and holding a cup while drinking
 - ◊ Difficulty walking, hopping, skipping, throwing and catching a ball, riding a bike
 - ◊ Delay in using spoken language and speech that is difficult to understand
 - ◊ Bumping into objects
 - ◊ Late establishment of laterality (right- or left-handedness)
 - ◊ Difficulty doing fine-motor activities such as tying shoelaces or buttoning clothing
 - ◊ Difficulty with handwriting
 - ◊ Sensitivity to touch — may find clothing uncomfortable; and may find hair-brushing and cutting, teeth-brushing and nail-cutting unpleasant
 - ◊ Poor sense of direction
- Though not always, dyspraxia often co-exists with other learning disabilities, such as dyslexia (difficulty reading, writing and spelling) and dyscalculia (difficulty with mathematics); as well as AD/HD (Attention-Deficit/Hyperactivity Disorder).
- There is no cure to dyspraxia, however early intervention can help a person learn to deal with his or her difficulties. Depending on the severity of the disability, work with occupational, speech and physical therapists can greatly improve a person's ability to function and succeed independently.

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Visual Motor Integration

This is the ability to use visual cues (sight) to guide the child's movements. This refers to both gross motor and fine motor tasks. Often children with difficulty in this area have a tough time orienting themselves in space, especially in relation to other people and objects. These are the children who are often called "clumsy" because they bump into things, place things on the edges of tables or counters where they fall off, "miss" their seats when they sit down, etc. This can interfere with virtually all areas of the child's life: social, academic, athletic, pragmatic. Difficulty with fine motor integration effects a child's writing, organization on paper, and ability to transition between a worksheet or keyboard and other necessary information which is in a book, on a number line, graph, chart, or computer screen.

For writing

Adding more structure to the paper a child is using can often help him/her use the paper more effectively. This can be done in a number of ways. For example, lines can be made darker and more distinct. Paper with raised lines to provide kinesthetic feedback is available. Worksheets can be simplified in their structure and the amount of material which is contained per worksheet can be controlled. Using paper which is divided into large and distinct sections can often help with math problems.

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