

## **Fine Motor Skills**

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Fine motor skills are defined as the ability to control and coordinate muscles of the hand for precise movements. These skills play an enormous role in daily activities of independent living, including dressing, feeding yourself, and self-care. Examples of fine motor skills include cutting with scissors, tying shoelaces, and writing. Gross motor skills, on the other hand, are defined as larger movements of the arms and legs. Additionally, fine motor skills typically depend on coordination between the hands and the eyes. The development of fine motor skills is dependent on the development of gross motor skills, cognitive skills, and visual perceptual skills.

The development of motor skills typically progresses from cephalic to caudal. For example, infants need to develop head support before they develop control of their arms and legs. Skills also typically develop in a proximal to distal fashion. Infants develop control of their upper arms before they develop control of the smaller muscles in their hands. The development of fine motor skills relies on the developmental level of the child. The progression of fine motor skills is often defined in terms of developmental milestones.

At birth, infants have no voluntary control of their hands. They can also open and close their hands in response to stimuli. However, movement of their hands is dominated by the primitive grasp reflex. As infants age, and are between six and 12 months, the grasp reflex develops. At around eight months, they are able to use their thumb and four fingers to grasp objects, which progresses to just two fingers and the thumb at nine months. Then around 10 or 11 months of age, infants develop the pincer grasp, which involves the thumb and the index finger.

Between year one and year two, infants develop their abilities to reach, grasp, and release objects. At this time, fine motor skills are related closely with adaptive and cognitive development. At 15 months, infants are able to build a tower of three to four blocks. At approximately 18 months, they can use crayons to scribble on a page. Then at 20 months, they can use a spoon to feed themselves. By two years old, infants are able to use both a fork and a spoon to feed themselves, and build a tower with six or more blocks. At this age, they will also be able to button and unbutton clothing.

At three years of age, children are able to copy a picture of a circle, and cut with scissors. By age four, children have developed their grasp, and now have finer control over pencil movements. Most children at this age can copy a picture of a square or a cross, start writing letters of the alphabet, and can also draw stick figures. They also start learning how to tie single knots. Around age five, children can write their first name, and cut more proficiently with scissors. They have also developed the ability to dress themselves and brush their teeth independently. At this age, their ability to write has developed even more. They can usually write their full name by using their fingers to control the pencil, rather than their wrist and forearm.

Developing fine motor skills is essential for cognitive development. Children who have stronger fine motor skills have been found to have higher academic achievement, develop reading skills earlier, and also have higher mathematical achievement. Therefore, when there are red flags in motor development it is important to address them early. Red flags in motor development include lack of steady head control while sitting at four months of age. Another red flag is the inability to sit at nine months. Lastly, the inability to walk independently at 18 months is another red flag of motor development.

Posture control is one factor that can influence the development of fine motor skills. Postural control allows the child to maintain and change the position of their trunk and neck. Proper sitting posture allows for effective hand use and manipulation. Additionally, children should have good sensory and body awareness. If a child has poor body awareness, they will not have an understanding of how their body has to move to complete a task, which will impact their fine motor skills.

Weakness and incoordination can result from slow development of the forearm and hand. This will impact a child's ability to grasp objects and pinch their fingers together. However, there are certain techniques to help develop a child's fine motor skills. For example, playing with Legos can build hand and finger strength. Additionally, playing with bubble wrap and play dough can build strength in a child's fingers, and improve grip strength. However, the increased use of technology has become prevalent in our society. Future research could examine how the influence of technology will impact the development of fine motor skills.

### **Further Reading**

Gaul, D., & Issartel, J. (2016). Fine motor skill proficiency in typically developing children: On or off the maturation track?. *Human movement science, 46*, 78-85.

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