chapter

Physical Development in Preschool Children

APPEARANCE AND GROWTH

MOTOR DEVELOPMENT

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Fine Motor Development

LIVING WITH... THE PRESCHOOLER AT HOME AND AT THE CHILD-CARE OR PRESCHOOL CENTER

Ensuring the Preschooler’s Health
Ensuring the Preschooler’s Safety: Dealing with Child Abuse
Playthings for the Preschooler

“Push us, push us,” sang out a trio of girls on swings

“I can’t push all of you,” called Monique, one of their teachers, as she walked toward them from across the nursery school yard. “Someone’s going to have to push.”

“Uh, I know how to pump. My brother taught me,” said one. She backed up against the swing, and then plumped onto it just as it began to swing forward. She thrust her short legs awkwardly out in front.

“That’s right,” said Monique. “Your legs go out as you go forward and back as you go back.”

“I want to try,” said one of the other girls. “Me, too,” said the third.

Monique watched as they struggled to coordinate their movements with the swings. “You’re getting it,” she called to them.

As they practiced, Monique kept an eye on other activities in the yard. Two children were climbing a jungle gym, and a third was hanging upside down by her knees from the top bar, about four feet above the sandy ground. “Hang on tightly, Alice,” Monique called out. Nearby, a child was standing on top of a seesaw, trying to find a spot in the middle where
It appears that only one of these preschoolers, the boy in the striped shirt, has mastered the art of pumping a swing. With coaxing and encouragement, the others will soon learn. Wise adults have seen to it that these swings have safe, soft seats. Hard rubber or wooden seats present a grave danger to any child who wanders into the swinging set zone and is hit. This play area could be made safer still by surrounding it with railroad ties or short bushes to mark off a boundary beyond which children should not pass while other children are swinging. (Source: Robert Herbert)

Preschoolers usually keep quite busy, both outdoors and indoors. The preschool period lasts from 3 to 6 years of age. These are the play years. When children play outside, we can see clearly some of their physical skills. What can preschoolers do with the large muscles of their bodies that would be impossible for children only a year younger? Run? Hop? Jump? Pump a swing? And what can they do with their hands? Cut with scissors? Guide a paintbrush? Fashion something out of clay?

In this chapter, we examine the physical growth of preschoolers, their physical appearance, and their range of movement. We also discuss some of the diseases that are common among preschoolers and some of the precautions that parents and other caregivers can take to keep them healthy and safe.

**APPEARANCE AND GROWTH**

If a toddler and a preschooler were to stand side by side, the differences in their physical appearance would be striking. The preschooler is longer and leaner than the toddler, whose head is not as large in proportion to the rest of his body as is the toddler's. The preschooler's legs and trunk are also longer than the toddler's, and they will continue to grow faster than his head for the next several years. This differential growth of body parts changes the preschooler's body proportions dramatically over the course of the preschool years (see Figure 4-2). For example, the toddler's stomach protrudes, but the preschooler's does not. Increased growth of the trunk provides more space for the preschooler's internal organs, and an increase in muscle tissue enables the abdominal muscles to exert more resistance, and hold internal organs in.

Although their appearance changes quite a lot, preschoolers do not actually grow very much—at least not compared to how much babies grow. The decrease in growth rate that began during the toddler years continues during the preschool years. In fact, the rate of growth during the preschool years is slower than it has been at any time during the child's short life.

Of course, preschoolers do gain weight and grow taller. The average preschooler gains about 3 pounds per year (compared with 14 pounds gained between birth and the first birthday)—a total of 9 pounds over the three-year preschool period. The average child in the United States weighs 31 pounds at the beginning of the preschool period (age 3), 35 pounds at age 4, 38 pounds at age 5, and 43 pounds at age 6 (Figure 9-1).

Increases in height are moderate too. The child grows about 2 1/2 inches per year from the age of 3 until the age of 10 (Lowrey, 1978). At age 3, the average child is 37 inches tall. By age 6, the average child is 45 inches tall. Compared with the gain of 10 inches between birth and 1 year, 4 1/2 inches between 1 and 2 years, and 3 1/2 inches between 2 and 3 years, the preschooler's growth rate with respect to height is modest indeed.

Recall from our discussion of physical development in the toddler (Chapter 5) that slower growth reduces a child's appetite. Preschool children usually eat relatively little; sometimes, they eat very, very little. The child's small appetite is normal. Preschoolers' appetites are also uneven. Sometimes they eat heartily for a period of one or two months, and then they show little interest in food for a while. Fluctuations in appetite, though evaporating for parents, usually correspond to bursts of faster and slower growth.

To make sure that children are adequately nourished, even though they eat relatively little, parents can curtail non-nutritious between-meal snacks and offer children wholesome foods. If children have a choice of only nourishing foods, their appetites can be the guide to how much they need to eat. If parents provide non-nutritious foods as choices, children's small appetites are satisfied, but the foods do not provide the nourishment they need. Preschoolers need high levels of calcium and other minerals to support bone growth; they also need iron, vitamin C, and protein to maintain health and sustain growth.

**FIGURE 9-1** Height and weight for children 3 to 6 years of age. The graphs reflect height and weight for children who are average (50th percentile). Growth is slower during the preschool years than it was during toddlerhood.
MOTOR DEVELOPMENT

How do preschoolers use their stronger, more coordinated bodies? How can adults help them develop their motor skills in appropriate ways? We look more closely now at the development of preschoolers' motor skills, both gross and fine, as well as at the implications of these developments for parents and teachers.

GROSS MOTOR DEVELOPMENT: LOCOMOTOR JILLS

At the beginning of this chapter, we mentioned a variety of motor activities commonly seen in preschoolers—balancing on a seesaw, hanging upside down from a climber, and jumping over canals in the sand. Preschoolers owe a great deal of their agility to their lower center of gravity. The center of gravity—the point in the body around which the weight is evenly distributed—is very high in the newborn, near the bottom of the back brace. As children grow and their head takes up less of their overall body length, their center of gravity moves down. By the time children are 5 or 6 years of age, its located just below the navel (Lewlow, 1978). As long as the center of gravity is higher, the child has difficulty maintaining balance. The toddler's top-heavy center of gravity moves lower.

WALKING AND RUNNING

Children learn to walk when they are toddlers. Between the ages of 2 and 3, they start running. They appear to run before age 2, but at first when running, neither foot ever actually leaves the ground at the same time. By age 3, children run, but in the same direction without continuing to run. Instead, they may stop running (but not too quickly or they will fall forward), then start running again. By age 4 1/2 or 5, preschoolers can dash first in one direction, and then in another, while continuing to run the entire time. They can also come to an abrupt stop and remain upright (Cratty, 1986). Preschoolers' days are full of movement. They twist, turn, run, bounce, and jump.

Children's increased ability to move during the preschool years results from a narrowing of the base on which they walk. Recall that toddlers walk with feet spaced widely apart, to create a wide base that offers a large foot. But balance has improved so much by about 3 1/2 years of age, that children can even place one foot in front of the other and walk a line drawn on the floor. By age 4, they can walk a curved line, which is harder than walking a straight line because children must place one foot in front of the other while turning at the same time. It is even more difficult to walk a balance beam (a board raised off the ground). To accomplish this, children must place one foot in front of the other while making adjustments in distributing their weight to each foot. Younger preschoolers have a hard time walking a balance beam—they usually step off to the ground several times to regain their balance as they make their way from one end of the beam to the other (Cratty, 1986).

JUMPING

The children digging canals in the sandbox were fairly accomplished center of gravity the point in the body around which the weight is evenly distributed.

marked-time climbing bringing the second foot to the step on which the first foot rests, before moving on to the next step.

jumpers. Even before they are 2 years old, children jump from a low height by stepping off with one foot while keeping the other foot in contact with the higher surface. By age 2, they jump with both feet suspended off the ground for just a moment. By age 3, children are getting higher when they jump off a low height; but they throw their arms back behind them and lean backward rather than forward. This "winging" movement creates an awkward jump that tends to leave the child off balance for the landing.

By about midway through the preschool years—by age 4 1/2—children have learned how to move their arms forward and up at the same time to become a couples, leaning forward as they go into the air. To leap over obstacles, they start by leading with one foot. Later, they can jump over things with both feet together. By age 5, most children can perform a whole repertoire of jumps. The movements involved in jumping are illustrated in Figure 9.2.

CLIMBING

Children begin to climb stairs about as soon as they can walk, even though toddlers usually go up stairs by climbing a step with one foot, and then bringing the other foot up to the same step, before moving to the next step. This is marked-time climbing. By the beginning of the preschool period, children no longer need to use marked-time climbing; they can walk up stairs by alternating their feet. But because balance is a greater problem when walking down stairs than when walking up, children usually maintain marked-time climbing as they descend stairs until they are about 3 years old.

Children use the same sequence of climbing skills when they play on playground climbing equipment. That is, they use marked-time climbing to get up ladders, climbers, and jungle gyms. But before they can climb by alternating their feet. And they can get up before they can get down. At the beginning of the school year, preschool teachers must watch for children who have climbed up bars by themselves but cannot figure out how to get down. Teachers can usually give children verbal instructions about how to retract their steps. Gradually, preschoolers come to feel comfortable on climbing structures. The girl at the beginning of this chapter who was hanging upside down from a climber was an older preschooler, perhaps a 5-year-old.

COORDINATING MORE DIFFICULT MOVEMENTS

The most difficult movements sometimes seen in the nursery school play yard include hopping, skipping, and galloping. These skills require better balance and coordination than do the basic skills of walking and running. Hopping, for example, requires very good balance, because it narrows the base of support to one foot when the other leaves the ground entirely for a moment. By age 3 1/2, children can hop a few steps on one foot; by age 5, they can hop 8 to 10 steps. Rhythmic hopping—hopping on alternate feet—requires balance and coordination beyond the ability of most 3-year-olds. Galloping and skipping are hard because they require coordination and shifts in
balance. Galloping involves an uneven rhythmic movement with a lead foot. Skipping requires alternation of the feet and coordination of a step forward and a hop forward. Most 4-year-olds can gallop. Most children cannot skip until they are about 6 years old (C aerially). The development that occurs in large motor skills during the toddler and preschool years is summarized in Table 9-I. Preschoolers also learn to move while they sit or stand atop various kinds of equipment, such as tricycles and scooters. Most 5-year-olds can ride a tricycle, most 6-year-olds can ride a bicycle. Older preschoolers can maneuver a scooter quite well. Older preschoolers can even begin to learn to roller-skate, ice-skate, and ski. But not until they are older can they manage a skateboard.

**Table 9-I Large motor skills**

<table>
<thead>
<tr>
<th>Age</th>
<th>Walking</th>
<th>Running</th>
<th>Jumping</th>
<th>Pedaling</th>
<th>Climbing</th>
<th>Throwing</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 months-</td>
<td>Walks in a wide</td>
<td>Uses bouncing steps off</td>
<td>Tries climbing up</td>
<td>Threws items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year</td>
<td>stance like a</td>
<td>bottom step of stairs with</td>
<td>anything climbable</td>
<td>such as food in a</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>a waddle</td>
<td>one foot</td>
<td></td>
<td>jerky sidearm</td>
<td></td>
<td></td>
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<tr>
<td>1-2 years</td>
<td>Moves rapidly in</td>
<td>Jump off bottom step with</td>
<td>Tries climbing to top</td>
<td>Threws ball by</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a hurried walk</td>
<td>both feet</td>
<td>of equipment, although</td>
<td>facing target and</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>in contact</td>
<td></td>
<td>cannot climb down</td>
<td>using both</td>
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<td></td>
<td>with surface</td>
<td></td>
<td></td>
<td>forearms to push</td>
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<tr>
<td>2-3 years</td>
<td>Runs stiffly; has</td>
<td>Sits on riding toy and</td>
<td></td>
<td>upoverhead with one</td>
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<tr>
<td></td>
<td>difficulty</td>
<td>pushes with her</td>
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<td>arm uses body</td>
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<td></td>
<td>running corners</td>
<td></td>
<td></td>
<td>rotation; does not</td>
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<td></td>
<td>and stopping</td>
<td></td>
<td></td>
<td>lose balance</td>
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<td>3-4 years</td>
<td>Runs more smoothly;</td>
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<td>more control over</td>
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<td>stopping</td>
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<td>4-5 years</td>
<td>Runs up stairs</td>
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<td></td>
<td>alternating feet;</td>
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<td></td>
<td>walks around</td>
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<td>scissors; steps</td>
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<td></td>
<td>with one foot;</td>
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<td>gallops; walks</td>
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<td>balance beam</td>
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<tr>
<td>5-6 years</td>
<td>Walks as an adult;</td>
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<tr>
<td></td>
<td>adult, slips</td>
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<tr>
<td></td>
<td>alternating feet;</td>
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**GROSS MOTOR DEVELOPMENT: UPPER BODY AND ARM SKILLS**

"Okay, Alecia. I'm going to throw the ball again. Get ready." Rick stands about five feet away from his daughter and gently tosses a soft ball to her.

Four-year-old Alecia stands with her arms extended straight out in front of her body. As Rick throws the ball, Alecia continues to look at her dad's face rather than the ball. As the ball approaches, she turns her head to the side and squints her eyes shut.

"Ohhh, you missed! Throw it back."

Alecia runs to get the ball. She extends her arm up above her head and throws the ball onto the ground in front of her. Rick picks it up and gets ready to throw again.

"Okay, are you ready?" he asks.

Alecia smiles and nods.

"Put your arms out in front of you," Rick instructs. "Now, this time, try to watch the ball, okay? Keep your eye on the ball." He tosses the ball. Alecia watches Rick's face again as the ball approaches, and again turns her head away and shuts her eyes, as it bounces softly against her chest.

"Oooohhh... almost!" Rick shouts. "Let's try it again!"

*If you have ever played catch with a young child, you will recognize this scene.*

*Why does Alecia have such difficulty catching the ball? How much practice do you think it will take for her to master this skill? Or is it even possible for a 4-year-old to learn to catch a ball, even with extensive practice?*
As long as the child is having fun and the adult encourages her, a game of catch can be a positive experience for a preschooler. But some ball skills are very difficult to master, and older children and adolescents are still learning and practicing them. Preschoolers really have their hands full in trying to learn the rudiments of throwing and catching a ball.

THROWING A BALL. The groundwork for ball playing is actually laid before the preschool years. Infants enjoy rolling a ball forward once they can sit up. Between 1 and 2 years of age, children start to throw or toss objects in the air from a sitting position. Older toddlers stand and toss a ball with both hands, but they do not shift their weight very much as they throw the ball. If they were to shift their weight, they probably would not remain upright due to their light center of gravity.

Once a child around Alecia’s age starts using a one-handed throwing strategy, we can observe a four-stage pattern of development (Williams, 1983). At first, she holds her body stiffly and throws the ball with a simple, fast arm extension. She does not rotate her body or “get behind the ball.” In the next stage, she twists her shoulder a bit to follow her arm as it moves forward, but she does not shift her body weight or change her footing.

Knowledge in Action

Making Playgrounds Safe

Skinned knees, scraped elbows, bruises, and bumps—these are the battle scars all children wear at one time or another as they develop their physical skills. Parents and teachers usually find that a few words of sympathy, along with a Band-Aid, some antiseptic spray, or an ice cube wrapped in a washcloth, are enough to ensure a speedy recovery. These occasions of being hurt and healed are actually an important part of the child’s early experience.

When children suffer more serious injuries at play, these often are the needless result of unsafe playgrounds. Approximately 150,000 children per year are seen in hospital emergency rooms for injuries sustained on playgrounds. Most injuries are caused by swings and swings sets. Climbing equipment comes in second, followed by slides and seesaws. Other injuries are caused by protruding bolts and sharp edges on play equipment and by play equipment that entangles a body part. The most serious injuries (and the most deaths) are caused by falls from a height (Greenberger & McInnis, 1989).

Safety standards have been issued jointly by the American Public Health Association and the American Academy of Pediatrics (1990). Both sets of standards recommend that surfaces under play equipment be given special attention. Concrete, asphalt, brick, and packed earth are hazardous and unacceptable. Minimally acceptable are grass, wood chips, 2-inch-thick gym mats, and 1 1/8-inch-thick rubber mats. The only fully acceptable safe surface is sand to a depth of 8 to 10 inches. A research lab also conducted tests to investigate the relative safety of various playground surface materials. They wanted to determine the heights from which a child could fall before the critical level for receiving a concussion was exceeded, expressed as 50 G (G stands for gravity) (Richter, 1979). As shown in Figure 9-3, a child would need to fall from over 11 feet to receive a concussion if the surface were better sand, but from less than a foot if the surface were concrete or asphalt.

Playground standards also suggest that safety zones surround play equipment such as swings so that children do not run into the path of moving swings. Low bushes, railroad ties partially buried in the sand, or some other barriers should be used to mark the zones. They also recommend that climbing structures built over a certain height have protective railings or be completely enclosed to prevent falls. Designers of playground equipment must remember that young children are thrilled to be 4 or 5 feet off the ground—heights of 10 or 12 feet are unnecessary.

Adults are encouraged to inspect equipment for exposed bolts, rough or rusty areas, or delaminated parts. Broken glass, crushed soda cans, and other trash in sand or wood chips also are hazardous. Adults should inspect grounds for such items and remove them. Children should never go barefoot where these dangers are possible, even if adults check the areas daily. Small pieces of broken glass may be missed and can cut children. Splinters from all wood chips are unpleasant; those from redwood chips quickly become inflamed.

The relationship between playground hazards and children’s injuries was demonstrated in a study of children enrolled in child-care centers in Atlanta. As the environmental hazards increased, so did the number of children’s injuries in child-care centers with 5 or fewer hazards, about 43 percent of the centers reported a playground injury. In centers with 4 to 11 environmental hazards, the percentage of centers reporting an injury rose to about 52 percent. In centers with more than 12 hazards, about 60 percent reported injuries (Sachs et al., 1990).

Even when playgrounds are safe, young children need supervision and guidance in using them. A safety zone around a swing will not do much good if children are not instructed to stay out of it. Children need to be taught not to climb over railings, not to throw rocks at the top of the slide, and not to ride bicycles outside of set paths. When the equipment itself is safe, adults can concentrate on helping the children learn to play safely.

Playgrounds can be made safer for children by raising public awareness of the dangers. A demonstration project in New York City illustrates what is possible (Fisher et al., 1989). The people who undertook this project inspected the playgrounds in one community, gave seminars and provided literature about playground safety to community personnel, and disseminated information to the public through the local newspapers. As a result, the community made significant changes in the local playgrounds. They covered hard surfaces under playground equipment with softer materials and reduced other hazards by 42 percent. Local hospitals subsequently reported that playground-related injuries had dropped by 22 percent. Clearly, by training personnel and providing information to the public, important steps can be taken to improve safety in local playgrounds.

![FIGURE 9-3 Distance a child could fall before receiving a concussion on various playground surfaces (Source: Adapted from Kompan Inc., 1985–1986 Catalog, p. 75.](image-url)
This 4 1/2-year-old is still learning how to catch a ball. After missing the first few times, she then caught the ball by trapping it with her arms and hands against her body. With a little more practice, she will learn to catch it between her hands. At first, she also squinted her eyes shut, as the ball approached. With more practice, she was able to watch it as it approached. This child has already begun to position her feet wide apart to prepare for catching the ball. This stance allows her to move from side to side, as needed, to adapt to the oncoming ball, without losing her balance. (Source: Elizabeth Crews)

In the third stage, she takes a step forward with the leg on the throwing arm side of the body as she extends her arm and releases the ball. She rotates her shoulder slightly but does not turn her body very much. Finally, she starts to rotate her body, first twisting it back as she pulls her arm back, then twisting it forward as she throws. As she rotates her body, her arm moves through a fairly wide arc, increasing the ball's velocity. Illustrations of this developmental sequence are shown in Figure 9-4.

It takes anywhere from three to five years for a child to move from the first through fourth stages of ball throwing. At age 3, a child is usually at the first stage by age 4 to 8, the child has usually attained a rudimentary Stage 4. Although throwing skills continue to be developed during the school-age years and adolescence, the basics can be mastered during the preschool period if the skill is practiced.

CATCHING A BALL Catching is also develops in stages. It begins when babies sit and catch a ball that rolls between their legs. Then, children begin to try to catch a ball when they are standing upright. Preschoolers find it easier to catch a large ball tossed straight at them than a smaller ball thrown up like a fly ball (Randt, 1983). Even so, they extend their arms stiffly to try to trap the ball with their arms, hands, and body. They do not reach out to grasp the ball with their hands. Like Alexa, they are also unable to follow the ball very well with their eyes, and they often turn their face away in a protective gesture as it approaches.

Somewhat later, they start to watch the ball as it approaches and use just their hands, rather than their arms and their chest, to grasp it. Later still, usually at about age 5, they place their feet wide apart on the ground in anticipation of needing to move to one side or the other to catch the ball. When they actually close their hands around the ball, they pull their arms back against their bodies to cushion the force of the ball.

**FIGURE 9-4:** Throwing a ball isn't as easy as it looks. Skill develops over a number of years and progresses through the stages shown here.

**Stage 1**

**Stage 2**

**Stage 3**

**Stage 4**

(Cratty, 1986). Only older children and adolescents are able to execute such maneuvers as jumping and extending one gloved hand to catch a fly ball. Most preschoolers cannot make these movements.

**REACTION TIME** In addition to mastering the physical movements needed to catch a ball, children must respond quickly when a ball is thrown. Reaction time consists of the time it takes the child to assimilate the stimuli (such as the appearance of an oncoming ball), make judgments about the throw, and then decide which movements to make in order to catch the ball or hit it with a bat. It also takes time for the child's mental plan to reach the muscles (Cratty, 1986).

Even a ball thrown slowly from a short distance requires a judgment the instant
it is in the air, or there will not be time enough to catch it (Whiting, 1969). As we saw, reaction time in a 4-year-old such as Alecia is very slow. It improves quite a lot between ages 3 and 5, but the reaction time in a preschooler still lags way behind the reaction time seen in older children and adults. The throwing, catching, and batting skills seen in many older children can be attributed to their faster reaction time.

Like the locomotor skills, the upper body and arm skills of throwing and catching develop gradually as the child grows. The centre of gravity continues to move lower in the body, muscle tissue increases, and fat decreases. The nervous system matures, which results in better co-ordination and improved reaction time. All the child needs from the environment is a ball, a willing and patient companion, and plenty of opportunities for practice.

FINE MOTOR DEVELOPMENT

A small group of preschoolers is sitting at a table in their nursery school classroom. Some are drawing with markers, others are using hole punchers. Still others are cutting with scissors. One of the younger children, a girl who is 3 years and 3 months old, attempts to cut a piece of construction paper. Irina positions her thumb in one of the holes of the scissors handle, and then sticks her index finger in the other hole. She positions the paper between the scissors blades and moves her hand, in an attempt to close them. But the scissors are positioned sideways, not straight up and down, and they do not close firmly on the paper. It is folded a bit, but remains whole.

Irina removes the paper and repositions her grip on the scissors. This time, she puts her thumb in the bottom hole of the scissors and places two fingers, her index finger and the next one in. In the other hole. The scissors are positioned straight down toward the table at the attempt to insert the paper. It doesn’t work. She turns the scissors to give them a more horizontal start and starts to point them toward herself. With this rotation of the scissors, Irina’s thumb and index finger are pointed upward. She inserts the paper once again between the blades and attempts to close it. She manages once again to close the scissors and catch the paper, but she does not cut it.

Irina’s mouth is now open, her tongue is sticking out, and she is licking the left corner of her mouth. She retreats her tongue, takes a deep breath, and exhales through her mouth. This is hard work.

She repositions the scissors once again, this time putting one side of the scissors handle in each of her hands. But now, with neither hand free, how will the paper get in between the scissors blades? The child tries to deal with the paper while it rests on the table, by moving the scissors so that the paper is between the blades. But as soon as she tries to close them, the paper slips out.

A teacher, watching from across the table, reaches over to take the paper. "Here, I’ll hold that for you, Irina." The teacher positions the paper between the scissors blades. Irina closes them, using both hands. This time, she actually makes a cut in the paper. She stops for a moment to inspect it, and then reopens the scissors and applies them again to the paper. She makes another stab, and then places the scissors on the table. She takes the piece of construction paper from the teacher’s hand and pulls it taut apart at the line she had cut with the scissors.

She holds up the two pieces of paper, one in each hand. "I cut it!" she announces, as she smiles broadly at the teacher. "I cut it!"

"Yes, you did, Irina. You cut the paper," the teacher confirms warmly.

Put a pair of scissors in your own hand and think about the movements you make when cutting a piece of paper. Which fingers do you put in the holes of the scissors handles? How much tension do you feel in the muscles of your hand as you hold the scissors? When you cut, do you close the scissors blades completely (way up to their tip), or do you cut using the portion of the blades nearest the handle? In cutting a piece of paper in half, how many times do you open and close the scissors blades? Do you use the supporting hand to turn and reposition the paper as you cut farther into it? Try cutting out a circle instead of simply cutting straight across a piece of paper. What changes do you notice in the movements of your supporting hand?

During infancy, the child learns how to grasp, let go, wave, and point. But infants and toddlers lack flexibility in moving their fingers. The major change in prehension (grasping) during the preschool years involves increasing skill in moving the fingers (Carlson & Cunningham, 1990). Young preschoolers hold the unique ability with their fingers, but they do not move the tool by moving their fingers. Instead, they use the muscles in their upper arm, or they move their wrist.

When a movement of an object is controlled by the upper arm or the wrist muscles, rather than by the fingers, the movement is larger, because the distance between the pivot (point of movement) and the object that is being moved (e.g., paintbrush) is relatively long. But when an object is moved with the fingers, rather than by the muscles in the upper arm, the distance between the pivot and the object being moved by the hand is shorter. Therefore, the movement is much more precise.

As a result of their increasing finger skills, preschoolers become fairly adept at putting pegs in pegboards, cutting, stringing beads, and manipulating markers and pencils. It takes some practice, as we saw in the scissors episode, but children do make steady progress.

The increasing use of finger movement enables preschoolers to achieve more and more independence in dressing themselves. They can button large and easily accessible buttons, zip up and unzip their shirts, and put most of their school supplies in their pockets (if the pockets are not too small), and pull on and take off their socks and shoes. Connecting the two ends of a zipper on a jacket or coat presents quite a challenge to the young preschooler, but many 5-year-olds have mastered even this difficult task. Because some aspects of getting dressed, such as tying shoes and fastening the straps of winter hats, are beyond the abilities of preschoolers, they still need to ask for help.

The improvement in preschoolers’ fine motor skills corresponds with their desire to be independent and help themselves. If parents choose clothes wisely, preschoolers can begin to dress themselves. If interested in nurturings a child’s physical independence, parents can avoid buying clothing that has tiny buttons, difficult snaps, openings in the back, and strings to tie. (For a discussion of how parents and teachers can help children with disabilities achieve independence, see Knowledge in Action: Education—Adapting the Environment to the Child with Disabilities.)