Gross motor skills

In the early days of intelligence testing it was widely thought that a person’s mental abilities were genetically determined and varied little throughout the life span, but it is now believed that nurture plays a significant role in giftedness. Researchers comparing the behavior of parents of gifted and average children have found significant differences in childrearing practices. The parents of gifted children spend more time reading to them and encouraging creative types of play and are more involved with their schooling. They are also more likely to actively encourage language development and expose their children to cultural resources outside the home, including those not restricted specifically to children, such as art and natural history museums. The involvement of fathers in a child’s academic progress has been found to have a positive effect on both boys and girls in elementary school in terms of both grades and achievement test scores. Within the family, grandparents can also play a positive role as mentors, listeners, and role models. A disproportionately large percentage of high-achieving women have reported that at least one grandparent played a significant role in their lives during childhood. (The anthropologist Margaret Mead named her paternal grandmother as the person with the single greatest influence on her life.) Even within a single family, giftedness can be influenced by such environmental factors as birth order, gender, differences in treatment by parents, and other unique aspects of a particular child’s experiences.

Standardized intelligence tests—most often the Stanford-Binet or Wechsler tests—almost always play a role in assessing giftedness, even though such tests have been criticized on a variety of grounds, including an overly narrow definition of intelligence, possible racial and cultural bias, and the risk of unreliability due to variations in testing conditions. Critics have questioned the correlation of IQ scores with achievement later in life, pointing out that standardized tests don’t measure many of the personal qualities that contribute to professional success, such as independence, motivation, persistence, and interpersonal skills. In addition, the creativity and intuition that are hallmarks of giftedness may actually lower a person’s scores on tests that ask for a single solution to a problem rather than rewarding the ability to envision multiple solutions, a trait—called divergent thinking—by psychologists and educators—that often characterizes giftedness.

Further Reading

Gross motor skills

The abilities required in order to control the large muscles of the body for walking, running, sitting, crawling, and other activities.

Motor skills are deliberate and controlled movements requiring both muscle development and maturation of the central nervous system. In addition, the skeletal system must be strong enough to support the movement and weight involved in any new activity. Once these conditions are met, children learn new physical skills by practicing them until each skill is mastered.

Gross motor skills, like fine motor skills—which involve control of the fingers and hands—develop in an orderly sequence. Although norms for motor development have been charted in great detail by researchers and clinicians over the past 50 years, its pace varies considerably from one child to the next. The more complex the skills, the greater the possible variation in normal children. The normal age for learning to walk has a range of several months, while the age range for turning one’s head, a simpler skill that occurs much earlier, is considerably narrower. In addition to variations among children, an individual child’s rate of progress varies as well, often including rapid spurts of development and frustrating periods of delay. Although rapid motor development in early childhood is often a good predictor of coordination and athletic ability later in life, there is no proven correlation between a child’s rate of motor development and his intelligence. In most cases, a delay in mastering a specific motor skill is temporary and does not indicate a serious problem. However, medical help should be sought if a child is significantly behind his peers in motor development or if he regresses, losing previously acquired skills.

Infancy and toddlerhood

The sequence of gross motor development is determined by two developmental principles that also govern physical growth. The cephalo-caudal pattern, or head-to-toe development, refers to the way the upper parts of the body, beginning with the head, develop before the lower ones. Thus, infants can lift their heads and shoulders be-
fore they can sit up, which, in turn, precedes standing and walking. The other pattern of both development and maturation is proximo-distal, or trunk to extremities. One of the first things an infant achieves is head control. Although they are born with virtually no head or neck control, most infants can lift their heads to a 45-degree angle by the age of four to six weeks, and they can lift both their heads and chests at an average age of eight weeks. Most infants can turn their heads to both sides within 16 to 20 weeks and lift their heads while lying on their backs within 24 to 28 weeks. By about 36 to 42 weeks, or 9 to 10 months, most infants can sit up unassisted for substantial periods of time with both hands free for playing.

One of the major tasks in gross motor development is locomotion, or the ability to move from one place to another. An infant progresses gradually from rolling (8 to 10 weeks) to creeping on her stomach and dragging her legs behind her (6 to 9 months) to actual crawling (7 months to a year). While the infant is learning these temporary means of locomotion, she is gradually becoming able to support increasing amounts of weight while in a standing position. In the second half year of life, babies begin pulling themselves up on furniture and other stationary objects. By the ages of 28 to 54 weeks, on average, they begin “cruising,” or navigating a room in an upright position by holding on to the furniture to keep their balance. Eventually, they are able to walk while holding on to an adult with both hands, and then with only one. They usually take their first uncertain steps alone between the ages of 36 and 64 weeks and are competent walkers by the ages of 52 to 78 weeks. By the age of two years, children have begun to develop a variety of gross motor skills. They can run fairly well and negotiate stairs holding on to a banister with one hand and putting both feet on each step before going on to the next one. Most infants this age climb (some very actively) and have a rudimentary ability to kick and throw a ball.

**Preschool**

During a child’s first two years, most parents consider gross motor skills a very high priority; a child’s first steps are the most universally celebrated developmental milestone. By the time a child is a preschooler, however, many parents shift the majority of their attention to the child’s cognitive development in preparation for school. In addition, gross motor activity at these ages requires increasing amounts of space, equipment, and supervision. However, gross motor skills remain very important to a child’s development, and maintaining a youngster’s instinctive love of physical activity can make an important contribution to future fitness and health.

By the age of three, children walk with good posture and without watching their feet. They can also walk backwards and run with enough control for sudden stops or changes of direction. They can hop, stand on one foot, and negotiate the rungs of a jungle gym. They can walk up stairs alternating feet but usually still walk down putting both feet on each step. Other achievements include riding a tricycle and throwing a ball, although they have trouble catching it because they hold their arms out in front of their bodies no matter what direction the ball comes from. Four-year-olds can typically balance or hop on one foot, jump forward and backward over objects, and climb and descend stairs alternating feet. They can bounce and catch balls and throw accurately. Some four-year-olds can also skip. Children this age have gained an increased degree of self-consciousness about their motor activities that leads to increased feelings of pride and success when they master a new skill. However, it can also create feelings of inadequacy when they think they have failed. This concern with success can also lead them to try daring activities beyond their abilities, so they need to be monitored especially carefully.

**School-age**

School-age children, who are not going through the rapid, unsettling growth spurts of early childhood or adolescence, are quite skilled at controlling their bodies and are generally good at a wide variety of physical activities, although the ability varies on the level of maturation and the physique of a child. Motor skills are mostly equal in boys and girls at this stage, except that boys have more forearm strength and girls have greater flexibility. Five-year-olds can skip, jump rope, catch a bounced ball, walk on their tiptoes, balance on one foot for over eight seconds, and engage in beginning acrobatics. Many can even ride a small two-wheeler bicycle. Eight- and nine-year-olds typically can ride a bicycle, swim, roller-skate, ice-skate, jump rope, scale fences, use a saw, hammer, and garden tools, and play a variety of sports. However, many of the sports prized by adults, often scaled down for play by children, require higher levels of distance judgment and hand-eye coordination, as well as quicker reaction times, than are reasonable for middle childhood. Games that are well suited to the motor skills of elementary school-age children include kick ball, dodge ball, and team relay races.

In adolescence, children develop increasing coordination and motor ability. They also gain greater physical strength and prolonged endurance. Adolescents are able to develop better distance judgment and hand-eye coordination than their younger counterparts. With practice, they can master the skills necessary for adult sports.