

when the cuboidal epithelium of the glomeruli becomes flattened. Before this time, the filtration capacity of the glomeruli is reduced. Urine is voided frequently and has a low specific gravity (1.008 to 1.012). At term, most infants produce and excrete approximately 15 to 60 ml/kg/24 hours, and an output of less than 0.5 ml/kg/hour after 48 hours of age is considered to be oliguria ([Blackburn, 2013](#)).

Auditory acuity is at adult levels during infancy. Visual acuity begins to improve, and binocular fixation is established.

Binocularity, or the fixation of two ocular images into one cerebral picture (**fusion**), begins to develop by 6 weeks old and should be established by 4 months old. **Depth perception (stereopsis)** begins to develop by age 7 to 9 months old but may not be fully mature until 2 or 3 years old, thus increasing infants' and younger toddlers' risk of falling.

Fine Motor Development

Fine motor behavior includes the use of the hands and fingers in the **prehension** (grasp) of objects. Grasping occurs during the first 2 to 3 months as a reflex and gradually becomes voluntary. At 1 month old, the hands are predominantly closed; and by 3 months old, they are mostly open. By this time, infants demonstrate a desire to grasp objects, but they “grasp” objects more with the eyes than with the hands. If a rattle is placed in the hand, infants will actively hold on to it. By 4 months old, infants regard both a small pellet and the hands and then look from the object to the hands and back again. By 5 months old, infants are able to voluntarily grasp objects.

By 6 months old, infants have increased manipulative skill. They hold their bottles, grasp their feet and pull them to their mouths, and feed themselves crackers. By 7 months old, they transfer objects from one hand to the other, use one hand for grasping, and hold a cube in each hand simultaneously. They enjoy banging objects and explore the movable parts of toys.

Gradually, the **palmar grasp** (using the whole hand) is replaced by a **pincer grasp** (using the thumb and index finger). By 8 to 9 months old, infants use a crude pincer grasp; and by 10 months old, they have progressed to a neat pincer grasp sufficient to pick up raisins and other finger foods ([Fig. 9-1](#)). They can deliberately let go of an object and offer it to someone. By 11 months old, they put objects into containers and like to remove them. By 1 year old,