**جامعة المستقبل  
قسم تقنيات البصريات**

**طــب عيـون الاطفــــال**

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**Visual acuity in children, methods for A. V testing**

**Description/Overview**

* **VISION**
* Vision or visual perception is a complex integration of light sense, form sense, contrast sense and color sense.
* VA is considered as a measure of form sense.
* **VISUAL ACUITY**
* Visual acuity, in preverbal infants, is defined as a motor or sensory response to a threshold stimulus of known size at known testing distance.
* In preliterate but verbal children, visual acuity is defined as the smallest target of known size at known testing distance correctly verbally identified by a child.
* Visual acuity improves rapidly during the first year of life and then matures more gradually to adult levels at approximately 5-6 years of age.
* Although the central cones function by term birth, acuity as measured by the different techniques does not approach 20/20 (6/6) until from 6 to 30months (depending upon the examination technique used).
* Reasons for this delay include the incomplete development and specialization of photoreceptors, maturation of synapses in the inner retinal layers, and myelination of the upper visual pathways.
* Foveal cones do not attain adult appearance until 4months after term birth, and visual pathway myelination continues until 2 years of age
* Why to record visual acuity in children?
* Most eye problems can be treated if detected early.
* Useful in decision making -
* To know if visual development is normal. • Helps decide eligibility for low vision and rehabilitation services.
* **TYPES :**
* There are at least two types of visual acuity :-
* Recognition acuity relates to the detail in the smallest letter, number or other shape that can be recognised.
* Resolution acuity is the smallest separation between dots or between bars in a grating that can be resolved.
* **AGE GROUPS**
* Infants-(Birth-12months)
* Toddlers-(12months-21/2years)
* Preschoolers-(21/2years-5years)
* School going children(5years-15years)
* **Visual milestones**
* Very soon after birth - Can fix and follow a light source, face or large, colorful toy.
* 1 month - Fixation is central, steady and maintained, can follow a slow target, and converge, preference of looking at face.
* 3 months - binocular vision and eye coordination, eyes follow a moving light or face, responsive smile.
* 6 months - Reaches out accurately for toys.
* 9 months - look for hidden toys.
* 2 years - Picture matching
* 3 years - Letter matching of single letters (e.g., Sheridan Gardiner)
* 5 years - Snellen chart by matching or naming

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| **Age** | **Reflex** |
| Birth | Blinking (to light stimulus) |
| 1 week | Vestibule-ocular |
| 2 weeks | Small saccades |
| 2 months | Large saccades Pursuit Bifoveal fixation  Convergence |
| 3 Months | Uniocular fixation |
| 4 months | Fusional vergence Sensory fusion Stereopsis |
| 6 months | Accommodation |

* **Visual acuity in preschool children**
* In preliterate but verbal children, VA as defined as the smallest target of known size at known testing distance correctly verbally identified by a child.
* **Desirable characteristics for preschool visual acuity test**
* Use of the Landolt C format.
* Use of single, isolated porotypes, rather than a full line or chart.
* A two-alternative force choice or matching response.
* Avoidance of the need for a verbal response or a directional response.
* A short test distance such as 3 meters, rather than traditional 6 meters distance.
* **Visual acuity chart for pre-school children**
* **VISION TEST IN 3-5 YEARS**
* Illiterate E- cutout test
* Tumbling 'E' test
* Isolated hand figure test
* Sheridan -Gardiner HOTV test
* Pictorial vision chart
* Broken wheel test
* Book candy bead test
* Light house picture cards.
* Sty car visual acuity test.
* Lea symbol.
* Kay picture test.
* Cardiff chart.
* Allen card test.
* Landolt 'c' or ring chart
* **Vision test in 2-3 years**
* Dot acuity test
* Coin test
* Miniature toy test
* **Vision test in 1-2 years**
* Marble game test
* Sheridan's ball test
* Boek's candy test
* Worth's ivory ball test