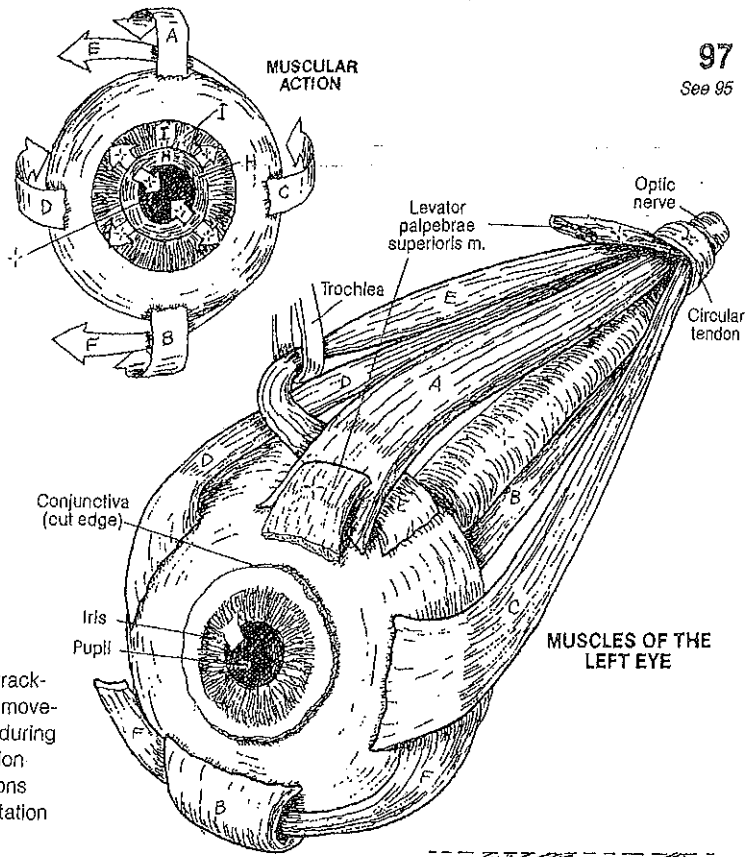


VISUAL SYSTEM (3)

CN: Use light colors for A-F, H, and I. Use contrasting colors for J and K. (1) After coloring each eye muscle, color its functional arrow in the upper diagram. (2) In the drawing on ciliary action, color only the contracted ciliary muscles. (3) Carefully color the diagram below, noting that only the first titles (visual field) receive J and K colors. The rest of the titles are left uncolored, but use the two colors on the structures to which they refer.



EXTRAOCULAR MUSCLES

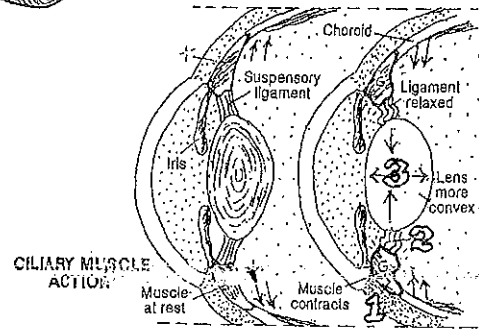
- SUPERIOR RECTUS (LEV)_bA
- INFERIOR RECTUS (DEPR)_bB
- LATERAL RECTUS (ABD)_cC
- MEDIAL RECTUS (ADD)_bD
- SUPERIOR OBLIQUE (ROT.R)_eE
- INFERIOR OBLIQUE (ROT.L)_fF

The extraocular (extrinsic) muscles of the eye provide for a remarkable tracking capacity of the eye. CNS mechanisms permit conjugate (binocular) movement of both eyes. Slowed, incomplete, or absent movement of one eye during tracking movements suggests cranial nerve dysfunction or muscle/tendon incarceration, as might occur in an orbital plate fracture. The true functions of these muscles is more complex than shown, one reason being eye rotation and torsion requiring multiple muscle action. Deviation from co-equal alignment of the eyes is called strabismus.

INTRINSIC MUSCLES

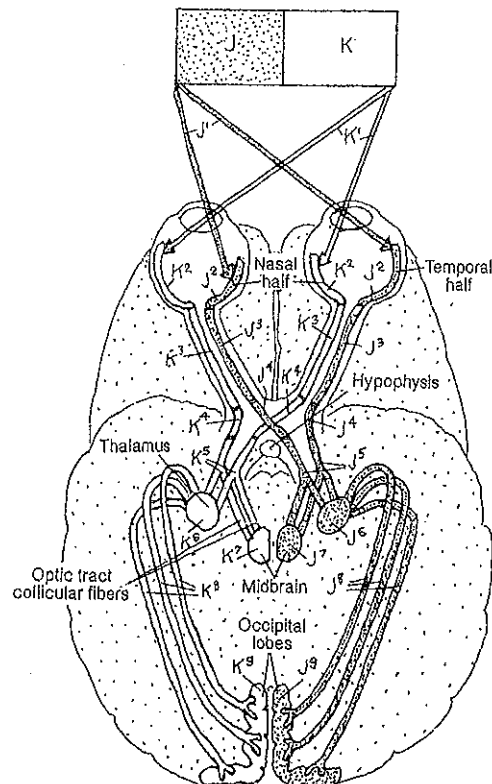
- CILIARY
- SPHINCTER PUPILLAE_H
- DILATOR PUPILLAE_I

The intrinsic muscles are located in the ciliary body (ciliary muscle) and the iris (pupillary dilator and sphincter). Contraction of the ciliary muscles (1) wrinkles the ciliary body tissue and puts slack in the processes, giving laxity to the suspensory ligaments (2) and permitting the lens to round up on its own accord (tension in lens fibers) (3). These muscles function (by parasympathetic innervation) during near vision in which greater refractivity is desired. The dilator pupillae consists of myoepithelial cells that pull the iris toward the ciliary body, dilating the pupil (sympathetic innervation). The sphincter pupillae circumscribes the inner iris; its contraction constricts the iris, narrowing the pupil (parasympathetic innervation). See the uppermost drawing.



VISUAL PATHWAYS

- VISUAL FIELD_J / VISUAL FIELD_K
- LIGHT WAVE_(J,K)
- RETINA_(J,K)
- OPTIC NERVE_(J,K) CHIASMATA_(J,K) TRACT_(J,K)
- LATERAL GENICULATE BODY_(J,K)
- SUPERIOR COLLICULUS_(J,K)
- OPTIC RADIATION_(J,K)
- VISUAL CORTEX_(J,K)



As you color the lower diagram, note that the axons (K²) from the retinas on the temporal side of the optic axis do not cross at the chiasma. Note further that an expanding tumor of the hypophysis is likely to impair visual acuity in the temporal visual fields only ("tunnel vision"). The thalamus functions as a visual relay center, informing multiple memory areas and other centers of the stimulus. The superior colliculi are visual reflex centers, making possible rapid head and body movements in response to a visual threat. Finally, note that the image of the stimulus impinging on the visual cortex (K/J) is the reverse of that which