

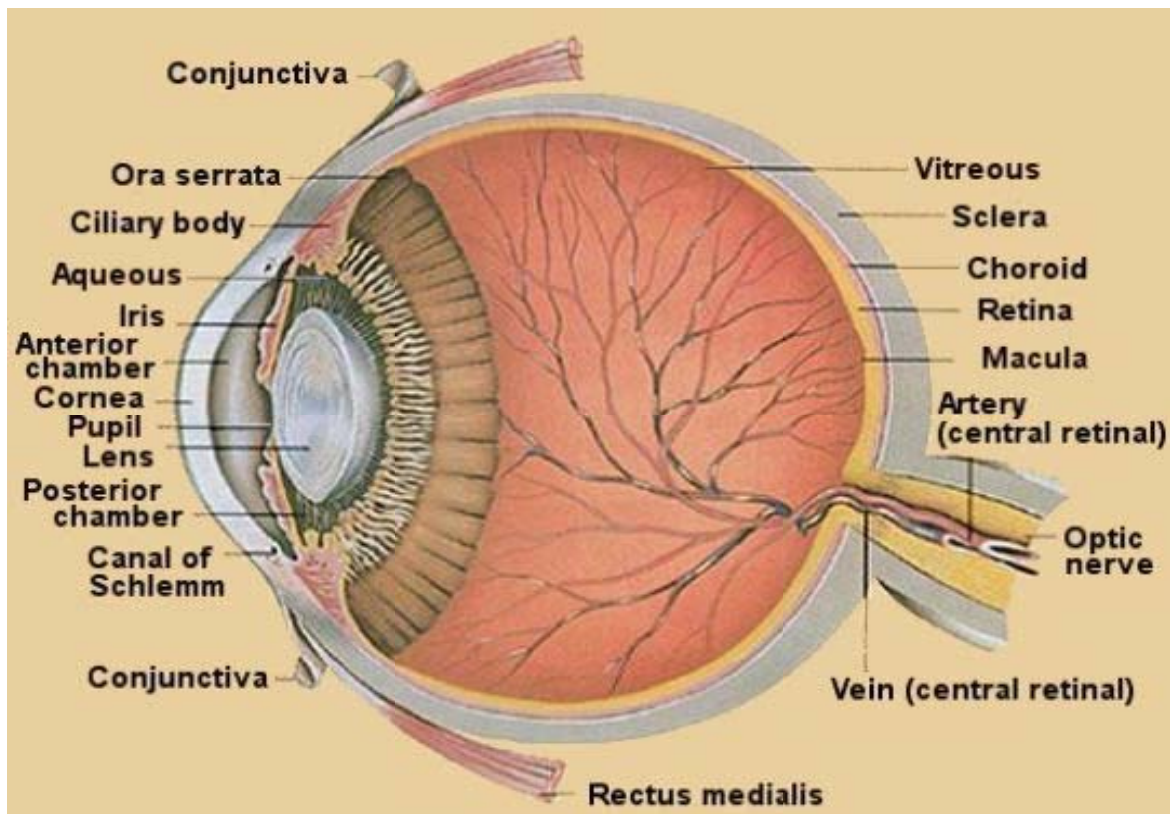
# EYE INJURIES IN BOXING

By  
Jean-Louis Llouquet  
Ophthalmologist  
French Boxing Federation

The eye is relatively well protected by the eye socket apart from the front.

Eye damage can be caused by a direct blow or sometimes by indirect shock.

## ANATOMY



- Eyelids  
The tear glands
- The eye:
  - The eyeball
    - *Front section:*  
Conjunctiva, cornea, anterior chamber, iris, corneal angle (the angle between the iris and the cornea), iris, lens
    - *Rear section:*  
Sclera, choroid, retina, macula, the periphery, vitreous humour (the transparent jelly-like tissue filling the eyeball behind the lens)
  - The neuromuscular cone (the shape of the muscles which are attached to the eye)

### **MECHANISM**

- Direct force = “blow”
- Transmitted force = “counter blow”
- Frontal compression and equal expansion with the following effects :
  - haemorrhages or rupture
  - blow out fracture - shockwaves through the outer layer of the eye

### **OCULAR CONCUSSION INJURIES**

- Eyelids: Wound, swelling, haematoma
- Eyeball: Fracture (floor of eyeball), eye bottom fracture
- Tear glands system: Rupture
- Neuro-muscular cone: Bleeding, double vision
- Eyeball
  - *Front section :*
    - Conjunctiva: Haemorrhage, allergic swelling
    - Cornea: Surface cut
    - Front chamber: Traumatic bleeding
    - Iris: Wound, changes in the pupil appearance
    - Lens: Unable to focus, out of place, out of socket cataract
  - *Rear section*
    - retinal tissue changes, swelling due to concussion.
    - **Retinal detachment**

**All those lesions are described in literature and may be theoretically observed**

**Actually:**

- *Slight incidents:*
    - eyelid and eyebrow wounds, haematoma
    - cornea laceration by the glove rubbing
- Two particular incidents:
- Post traumatic double vision following a haematoma on the inside of the eye socket or a muscular injury.
  - Eye lid emphysema, in the case of a fracture, the air of the sinus penetrating into the eye socket.

Remark:

Repeated lesions of the eye brow may cause a healing granuloma which is best excised to prevent recurrences

- *Severe incident :*
  - **Eye socket fracture**
  - **Cataract :**
    - Clinical sign = Failure of vision
    - Diagnosis = Lens opacity
    - Treatment = Surgery = Intraocular lens (IOL)
    - Result is excellent but the person is unfit to box
  - **Retinal detachment**
    - Usually secondary to preexistent lesions, sometimes caused by a unique shock.
    - Mechanism = A retinal detachment occurs for two reasons. Either there is a tear or because there is an abnormal traction on the retina
    - Clinical signs = Immediate or delayed black spots, flashes
    - Diagnosis = Fundus ophtalmoscopy (the process of looking at the back section of the eye with a torch)
    - Treatment = Surgery completed by laser photocoagulation

**Prevention must be the first treatment.**

**Eye injuries as a result of boxing mainly affect professional boxers**

## **EYE SAFETY IN BOXING**

The AIBA Medical Commission has been monitoring eye safety for a number of years.

An annual examination is recommended:

- to maintain a reasonable limit for boxing
- to check the state of the eye
- to detect pre-existing lesions around the retina
- to advise on preventive treatment (laser photocoagulation)

## **Eye requirements for licensing by the INTERNATIONAL BOXING ASSOCIATION**

- Uncorrected visual acuity:  
20/200 or better in each eye
- Corrected visual acuity:  
20/60 (amblyopia – reduced vision) or better in each eye
- Myopia (short-sightedness):  
No more than -3.5 dioptres in each eye
- No intraocular surgery (cataract, retinal detachment)
- No refractive surgery
- Absence of “major ocular disease” (glaucoma, macular abnormalities, major lens abnormality, dangerous peripheral retinal lesions).