



Strabismus and Amblyopia

เกณฑ์มาตรฐานแพทยสภา 2567 ข้อ 2.3.7 เรื่อง

Disorders of ocular muscles (strabismus, amblyopia)

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Resource (Flipped Classroom) (post COVID-19 era year 5)

เกณฑ์มาตรฐานฯ 2567 2.1 อาการ/ปัญหาสำคัญ

- 2.1.65 เคืองตา ตาแดง (eye irritation, red eyes)
- 2.1.66 ปวดตา (ocular pain)
- 2.1.67 ตาแห้ง (dry eye, dry eye syndrome)
- 2.1.68 มองเห็นไม่ชัด การมองเห็นผิดปกติ (blurred vision, visual disturbances)
- 2.1.69 เห็นภาพซ้อน (diplopia)

หน้า 56 จาก 105



แพทยสภา
The Medical Council of Thailand

ประกาศแพทยสภา

ที่ 4 /2567

เรื่อง เกณฑ์ความรู้ความสามารถในการประเมินเพื่อรับใบอนุญาต

เป็นผู้ประกอบวิชาชีพเวชกรรม พ.ศ. 2567

2.1.70 ตาโปน (exophthalmos)

2.1.71 ปวดตา (ocular pain, ophthalmalgia)

เกณฑ์มาตรฐานฯ 2567 2.3 โรคตามระบบ

2.3.7 DISORDERS OF THE EYES AND ADNEXA

กลุ่มที่ 2	กลุ่มที่ 3
<ul style="list-style-type: none">(1) Conjunctivitis(2) Dry eye syndrome(3) Hordeolum and chalazion(4) Pinguecula(5) Pterygium	<ul style="list-style-type: none">(1) Cataract(2) Dacryostenosis, dacryocystitis(3) Disorders of ocular muscles, refraction & accommodation (e.g., strabismus, amblyopia, myopia, presbyopia, hypermetropia, astigmatism)(4) Disorders of refraction and accommodation (myopia, presbyopia, hypermetropia, astigmatism)(5) Glaucoma(6) Keratitis(7) Retinopathy(8) Uveitis



หลักสูตรแพทยศาสตรบัณฑิต

Objectives

- สามารถวัด VA ในเด็กวัยต่าง ๆ ได้ถูกต้อง
- รู้และเข้าใจกายวิภาค และสรีรวิทยาของกล้ามเนื้อตา (prerequisite)
- ทราบนิยาม และลักษณะของตาเขชนิดต่าง ๆ
- สามารถตรวจตาเขได้ด้วยวิธี Hirschberg test, cover test
- สามารถแนะนำผู้ป่วย ผู้ปกครอง และส่งต่อผู้ป่วยตาเขในเวลาที่เหมาะสม
- บรรยายภาวะ amblyopia ชนิดต่าง ๆ ได้ถูกต้อง

หลักสูตรปรับปรุง พ.ศ. 2563

Contents

- Tests for VA
- Strabismus
- Amblyopia

Tests for VA

- Fixation target test :
 - fix and follow
- Allen card
- LEA chart
- E-symbol
- Snellen chart



21 3 2

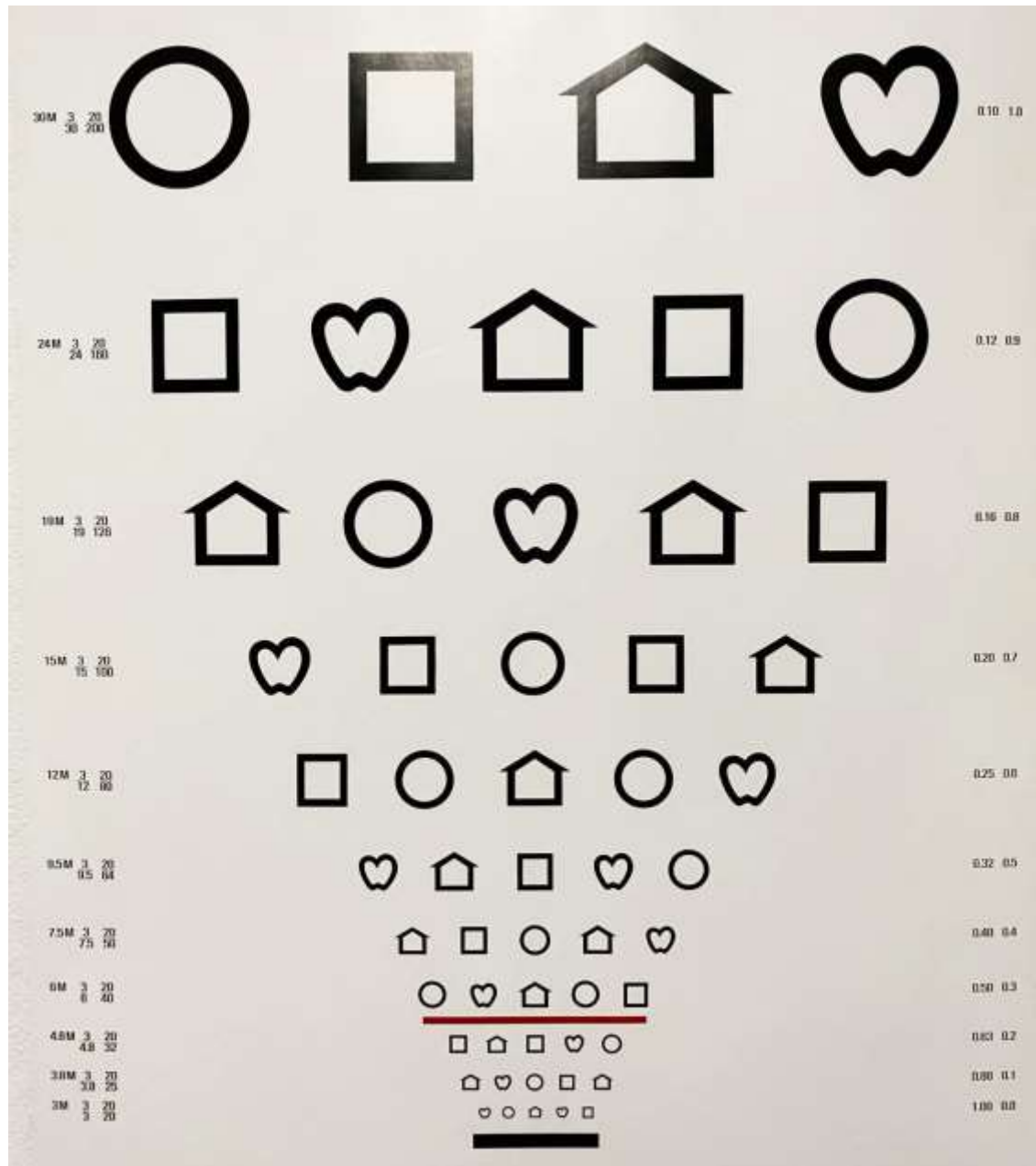
Fixation target test



OD fix and follow

OS fix and follow

LEA chart



12M 3 20
12 80



9.5M 3 20
9.5 64



7.5M 3 20
7.5 50



6M 3 20
6 40



4.8M 3 20
4.8 32



3.8M 3 20
3.8 25



3M 3 20
3 20



0.25 0.6

0.32 0.5

0.40 0.4

0.50 0.3

0.63 0.2

0.80 0.1

1.00 0.0

LEA chart

E-symbol

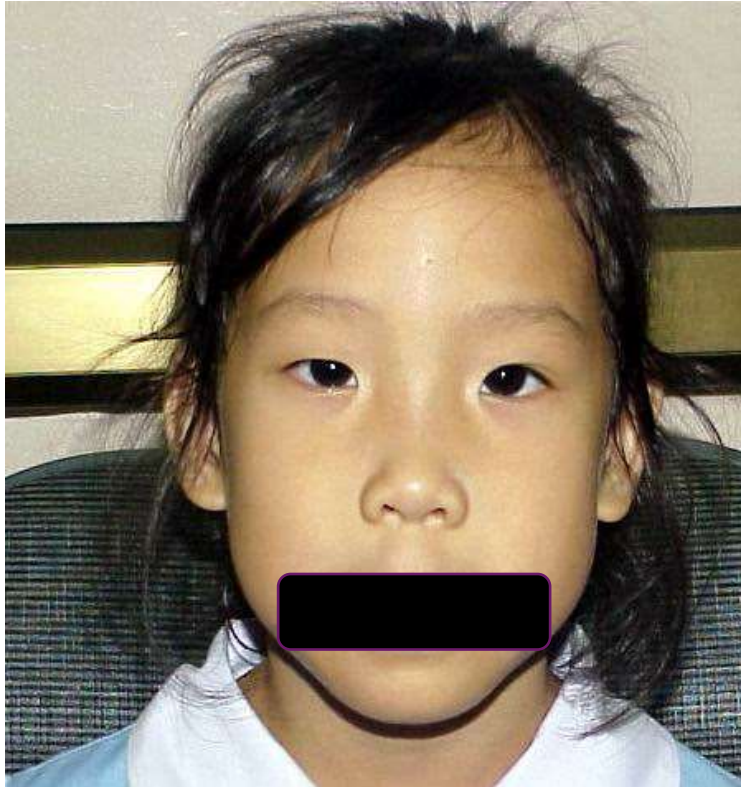


DISTANCE

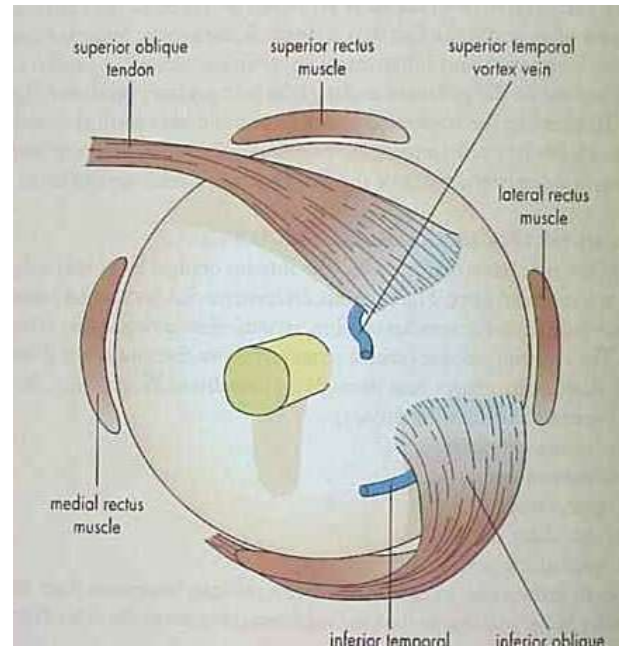
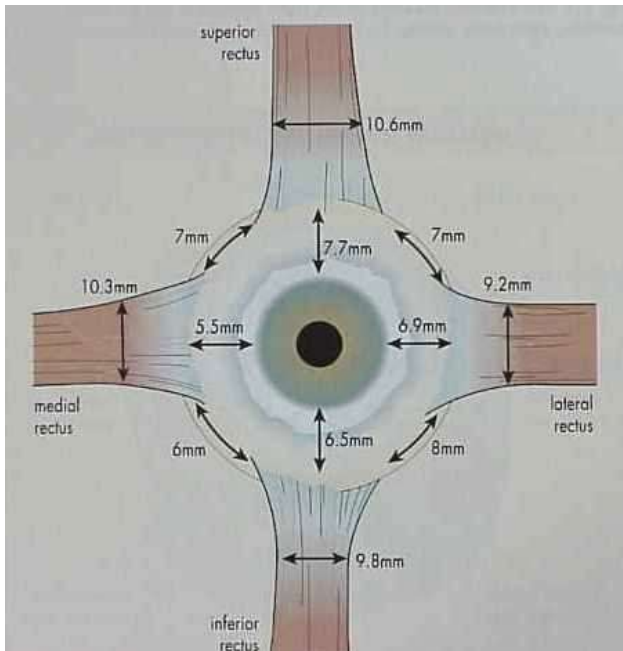
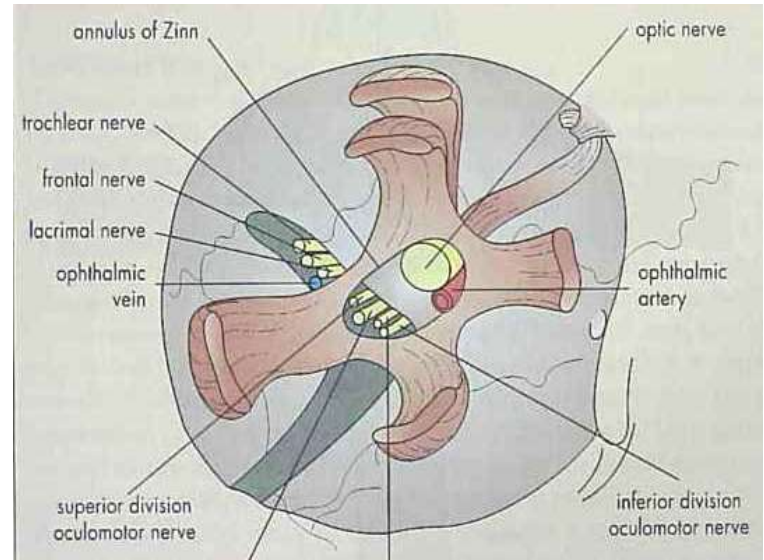
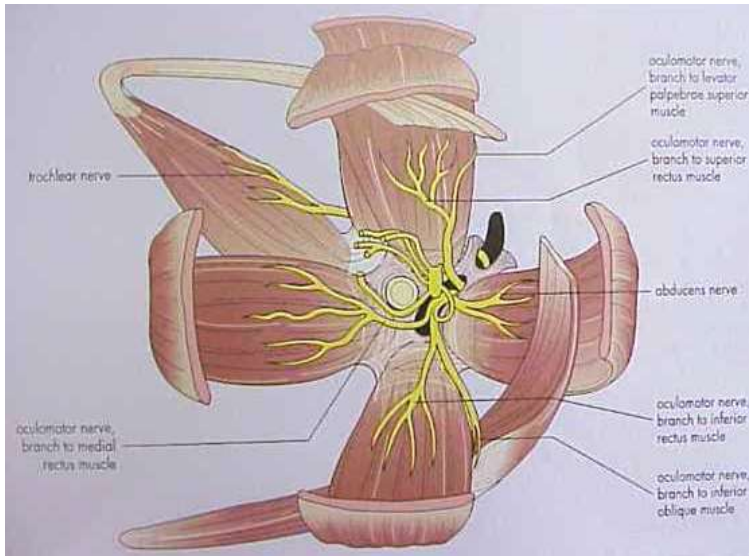
Terminology

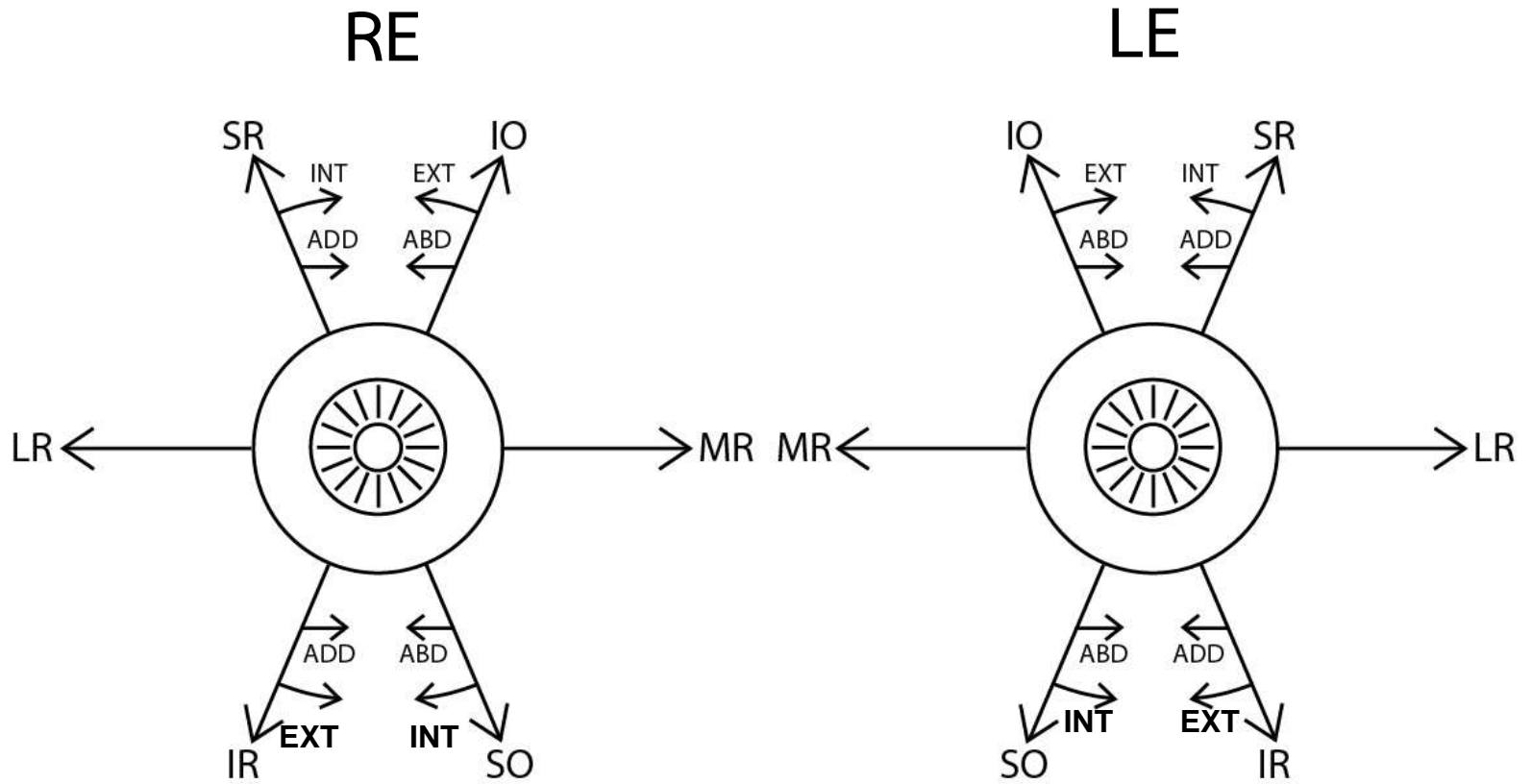


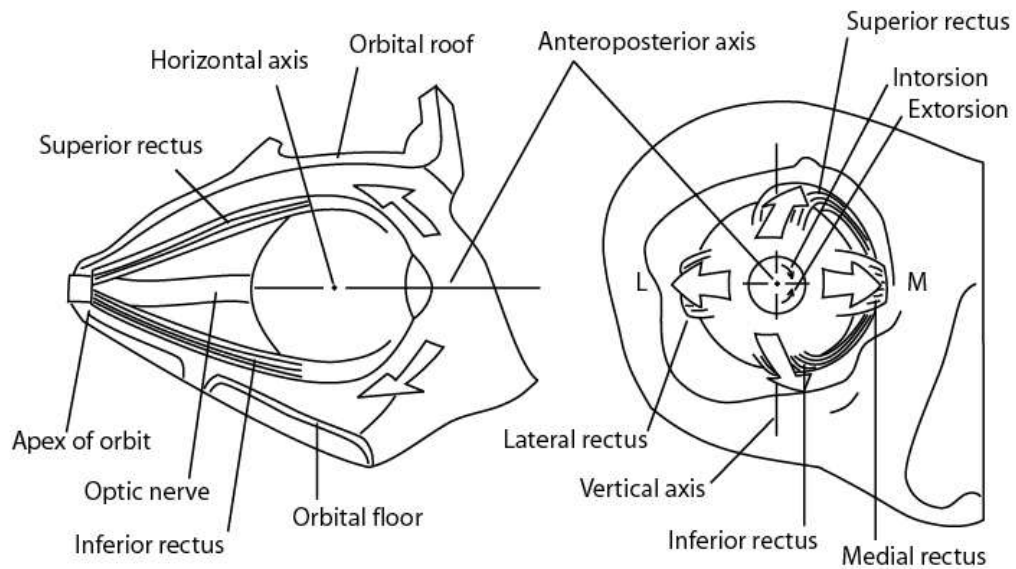
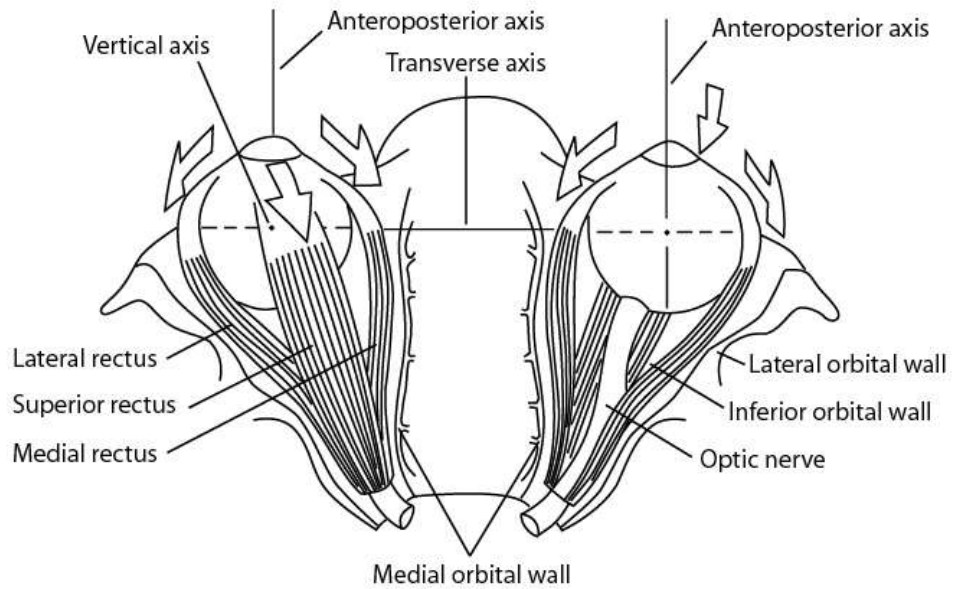
- strabismus*
- squint*
- crossed eye (eso)
- walled eye (exo)
- lazy eye **?
- ตาเข
- ตาเหล่
- ตาเอิก
- ตาซ้อน
- ตาเลื้อ
- ตาเซ่ ฯลฯ



ตาเขหลอก pseudostrabismus
(pseudoesotropia) ข่าวฟัง 2562

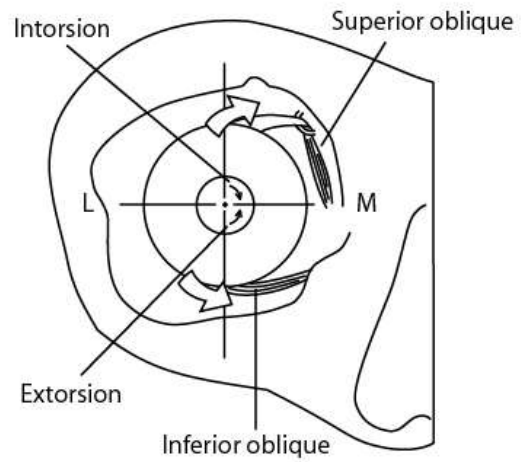
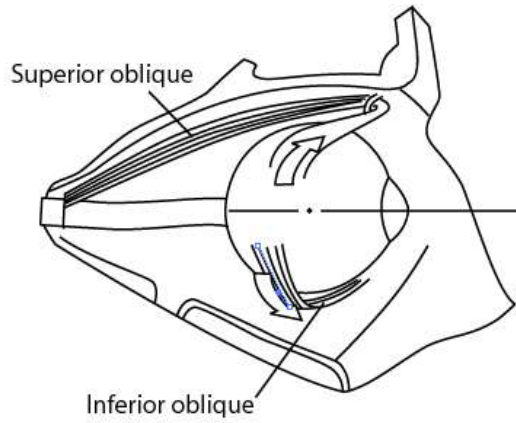
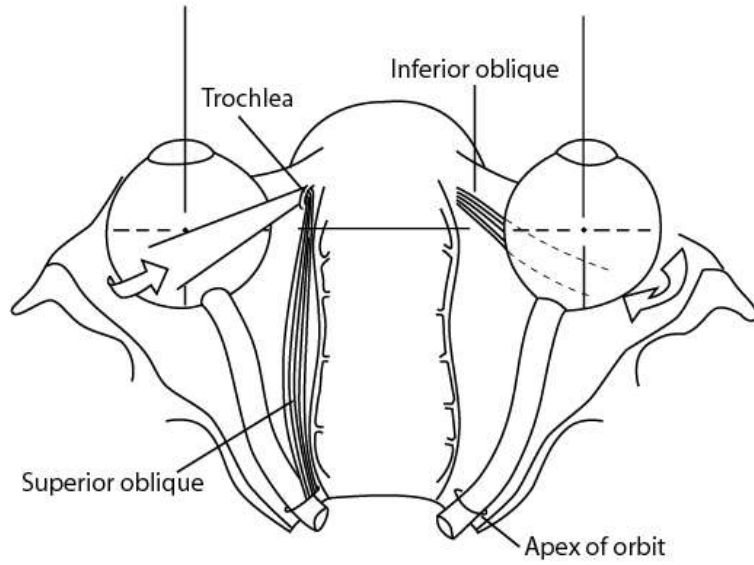






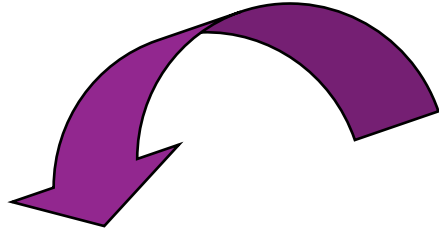
Reassure and follow 6-12 mo.



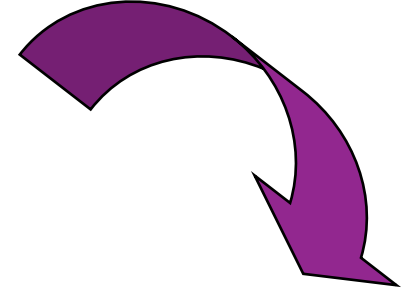


DUCTION

sursumduction



excycloduction



incycloduction

abduction



OD



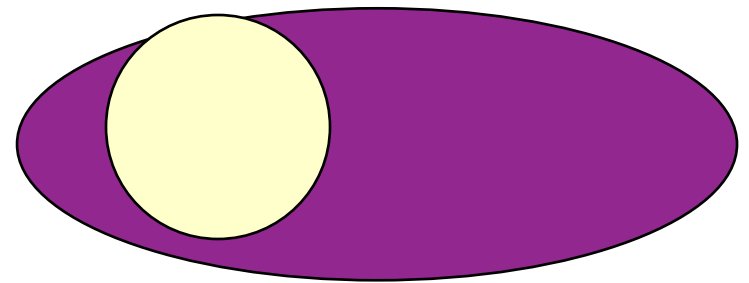
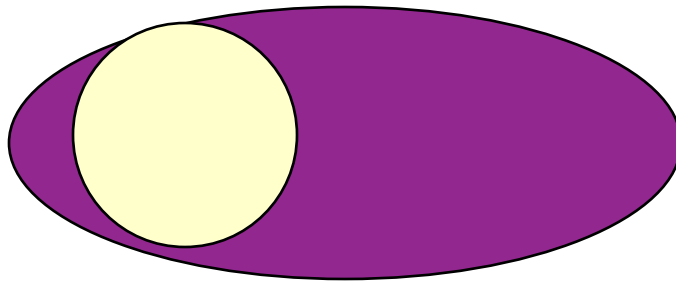
adduction



deorsumduction

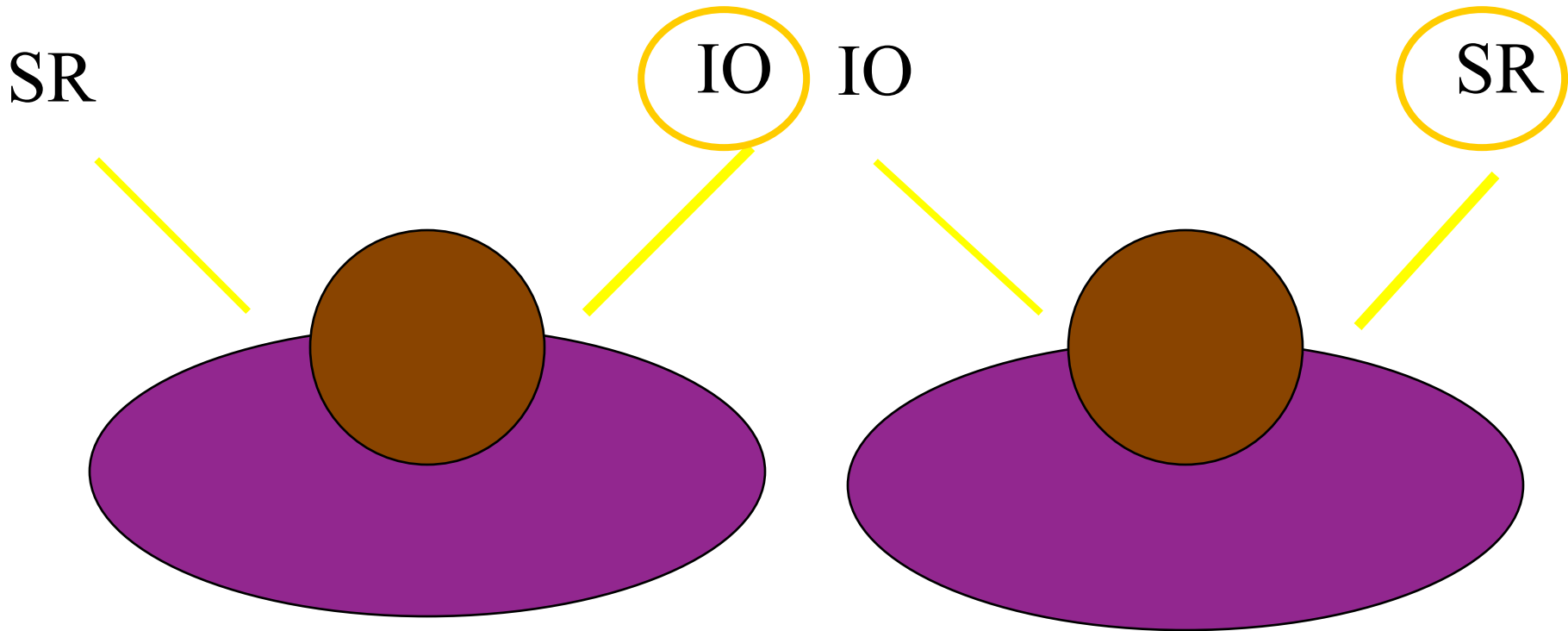
Version

- binocular eye movement
 - levoversion
 - dextroversion
 - sursumversion
 - deorsumversion
 - incycloversion
 - excycloversion



DEXTROVERSION

YOKE MUSCLES : RLR & LMR



OD

OS

YOKE MUSCLES

Strabismus classification

- *direction*: eso-, exo-, hyper-, hypo-
- *fusion ability* : heterophoria, heterotropia
- *age of onset* : congenital (infantile),
acquired-
- *comitancy*: comitant, incomitant
- etc...

Tests

- motor
- sensory

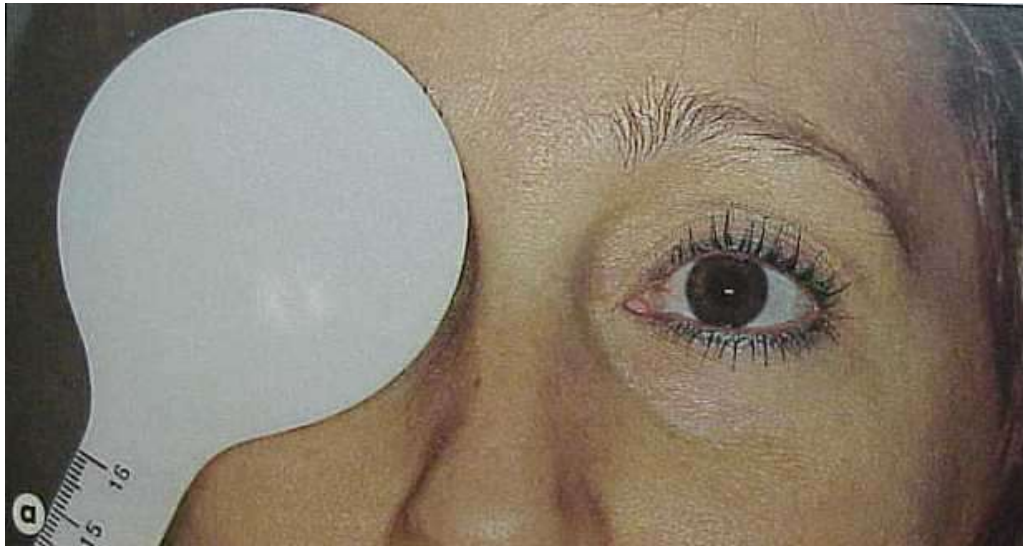
Cover test

cover-uncover :

detects (hetero)tropia

alternate cover test :

detects (hetero)phoria



OPD card

- Cover-uncover test:
 - Right/left eso/exotropia RET
 - Alternate eso/exotropia AXT
 - Orthotropia
- Alternate cover test
 - Esophoria E
 - Orthophoria



Hirschberg test

- Torch (penlight)
- Target
- Observe corneal light reflex OU



Hirschberg test

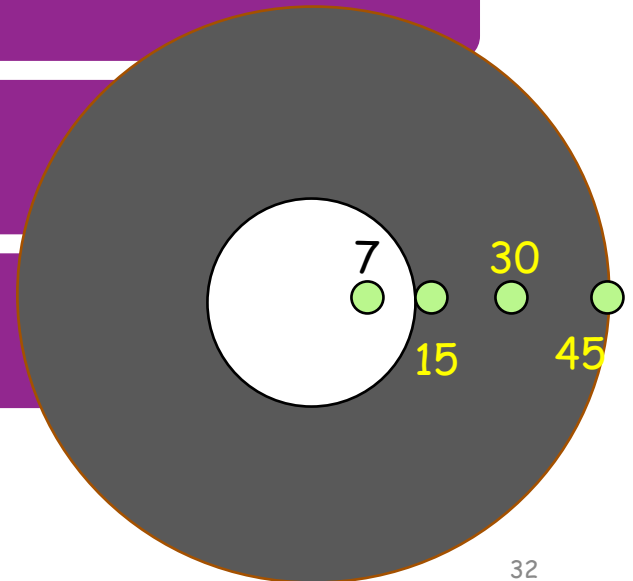
refer to pupil and limbus

between center and pupil margin : 7 deg

pupil margin : 15 deg

Mid-iris : 30 deg

limbus : 45 deg





Right hypotropia

Left hypertropia





Left sensory esotropia (LET)



RXT



Right hypertropia (RHT)



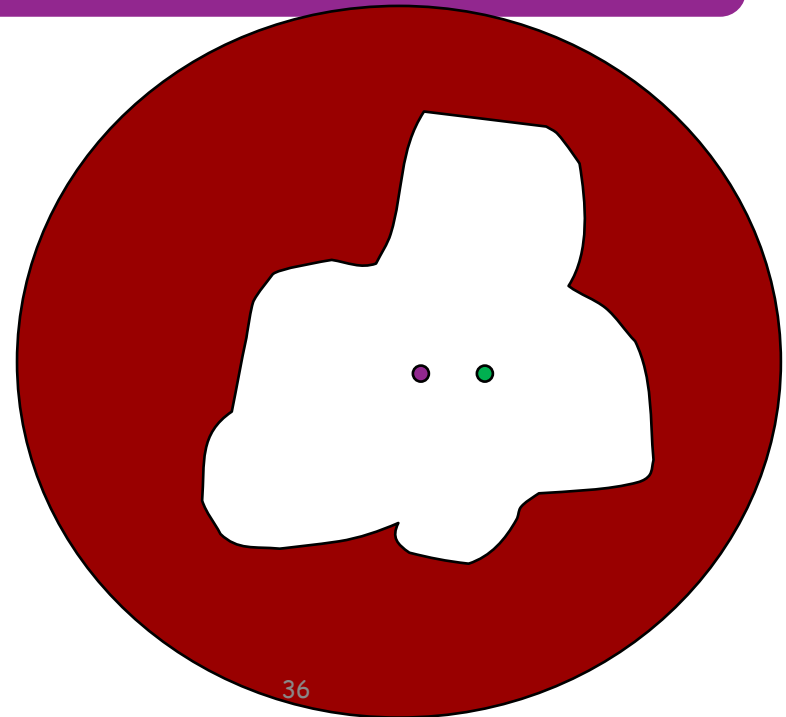
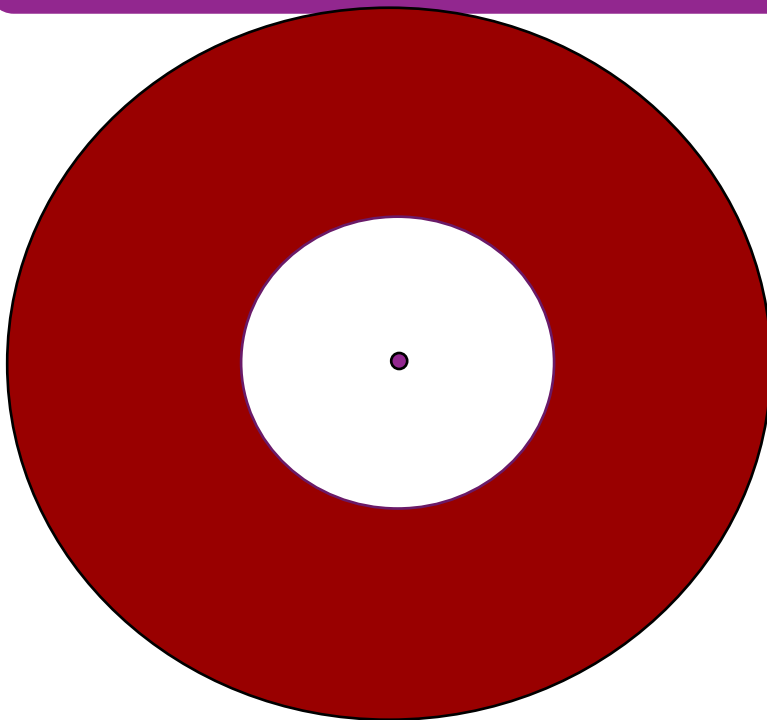
Right hypotropia (RHoT)

Hirschberg test

if pupil distorted, dilated, with posterior synechiae

decentration ? mm

1 mm ...7 degrees

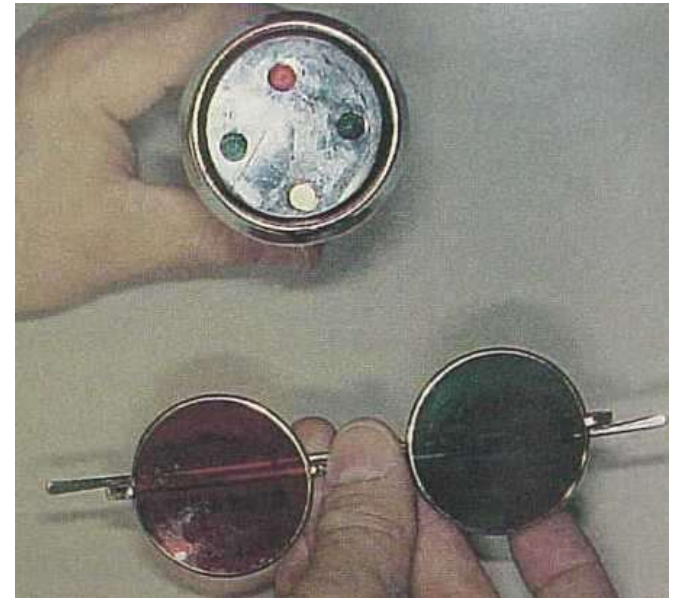


Alternate prism and cover test

- prism measurement of the deviation angle
- prism diopter (PD)
- 1 degree \sim 2 PD \triangle

Sensory test

- Worth-four dot test
 - fusion (see 4)
 - suppression of OS,OD or alternate suppression (see 2 or 3)
 - diplopia (see 5)



Sensory test

Titmus stereopsis test



Common strabismus conditions (SDL)

- Infantile esotropia
- Accommodative esotropia
- Intermittent exotropia
- Sensory strabismus
 - esotropia
 - exotropia

Common strabismus conditions (SDL)

- Paralytic strabismus
 - CN 3,4,6 palsies
- Restrictive strabismus
 - thyroid-related orbitopathy
 - blowout fracture

Infantile esotropia (SDL)

- onset before 6 months of age
- angle of deviation > 30 PD
- refractive error : normal with age
- amblyopia 40-50%
- treatment : surgery before 2 years of age

?





Occlusion therapy for right amblyopia
The earlier treatment, the better outcome

Accommodative esotropia (SDL)

- 2 types
 - refractive accommodative
 - high hyperopia
 - nonrefractive accommodative
 - high AC/A ratio
- treatment
 - hyperopic spectacle correction
 - bifocal spectacle correction



LET

(refractive accommodative ET)

(+6.00 diopters OU)



Orthotropia

(full hyperopic correction)

Nonrefractive accommodative ET; (high AC/A)



AT DISTANCE ตาตรง



AT NEAR เข้เข้า



BIFOCAL SPECTACLE CORRECTION

Intermittent exotropia (SDL)



ORTHOTROPIA
ตาตรงคือไม่มี tropia



LEFT EXOTROPIA

Paralytic strabismus (SDL)

- CN6

- esotropia

- CN4

- hypertropia

- CN3

- exotropia + hypotropia



Third nerve palsy



Trochlear palsy



Abducens palsy



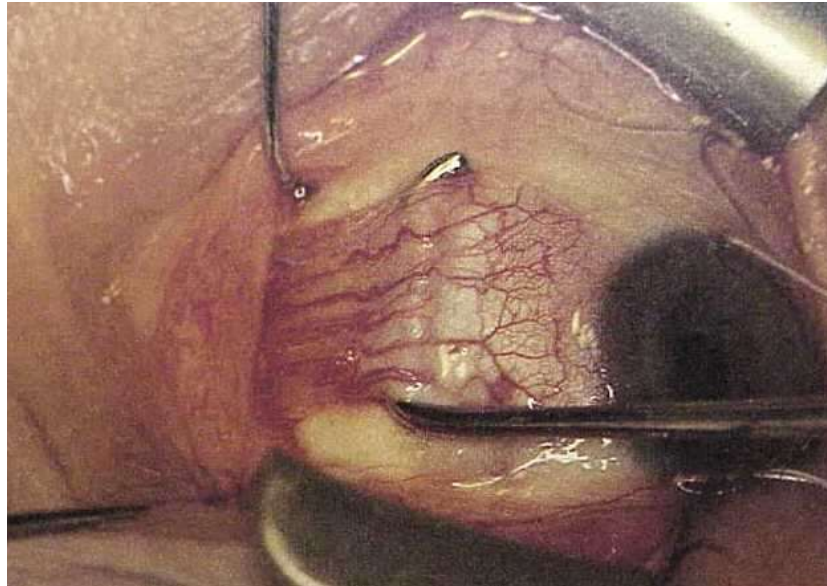
When to treat

- all children with strabismus
 - to prevent amblyopia
 - to improve single binocular vision
- strabismus in adults with symptoms

How to treat?

- Spectacles
- Patching (for kids with amblyopia)
- Surgery

Weakening -- *recession*



Strengthening -- resection



Botulinum (Botox) injection

Amblyopia

Features

- = **decreased vision** in an eye that otherwise typically appears normal
- usually unilateral
- may be bilateral (iatrogenic, uncorrected high bilat. refractive error)
- incidence : *2-4 %* (2-5%,Taylor) in general population
- The leading cause of monocular visual loss in 20-70 yo age group

Features

- never develop de novo after the age of *6-7 years*

(Tychsen,2002)

Features

- if previously amblyopic -- can return up to 10 years
- the younger at onset, the quicker and deeper it will develop
- the younger at onset, the more rapidly it can be reversed with treatment

Amblyopia (Lazy eye)

- Unilateral / bilateral
- Etiology
 - **Strabismus ****
 - High refractive error (iso-ametropia)
 - Anisometropia
 - Deprivation
- Treatment
 - Patch (the better eye)
 - Glasses
 - Correction of causes

VDO

