



eyes
ON OXFORD

bullcreek
OPTOMETRIST



NEURO-OPTOMETRY

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Learning Objectives

- Visual/ocular signs and symptoms presenting in patients in with pre-existing neurological conditions Assessment for physiotherapists and Allied health professions
- Develop an understanding of optometric assessment of visual dysfunction post neurological event
- Potential effects on a person's activities of daily living and options for optometric care

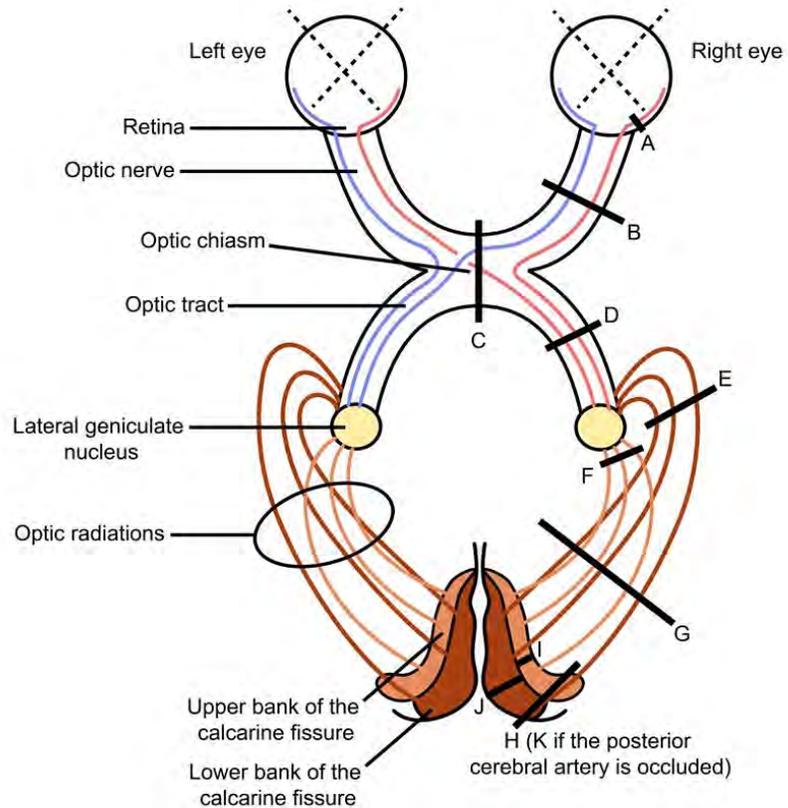


Visual Field Defects

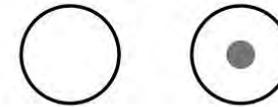
Visual and ocular signs in neurological disease

Most common:

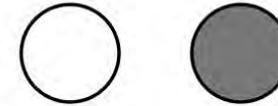
Visual field defects



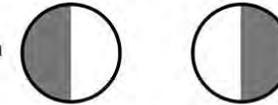
A) Central scotoma



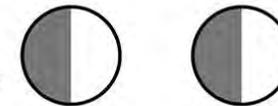
B) Monocular vision loss



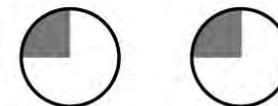
C) Bitemporal hemianopia



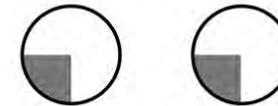
D, G, & H) Contralateral homonymous hemianopia



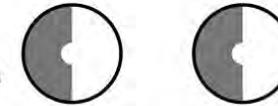
E & J) Contralateral superior quadrantanopia



F & I) Contralateral inferior quadrantanopia



K) Contralateral homonymous hemianopia with macular sparing



How do we deal with Visual Field Defects?

- Occlusion
- Partial Occlusion
- Segmented Occlusion
- Fresnel and or/ spectacle prism

For Hemianopia:

If mobility issues: Peli / Spot prism

Reading issues (especially with R sided loss)

Yoked prism

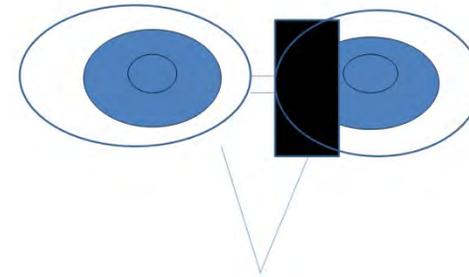


Spot patching is used to block the central vision of one eye, but maintain peripheral vision for both eyes, when there is double vision which cannot be solved by prisms, vision therapy or other methods.

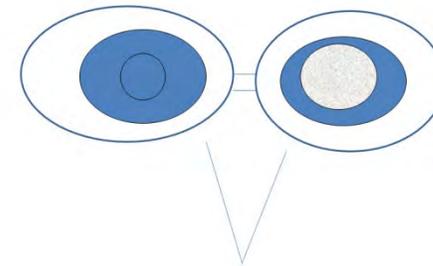


Left nasal patch

Sectoral patching is use of a partial patch on glasses to block vision of one or both eyes in an area of vision.



Binasal patching is a variation of using partial patching on glasses to cover some areas of vision. It can be used, where appropriate, for esotropia, amblyopia, and non-strabismic functional disorders.



“ Cloudy” Patching is the use of a specialised semi-translucent film applied to the back of a spectacle lens to minimise the brain’s confusion of having double vision’ the patch is much better-looking cosmetically.

Cranial Nerve Palsies

Most commonly seen are 3rd, 4th and 6th
Cranial nerve palsies

3rd Nerve Palsy “Down and Out “

4th Nerve Palsy “Up”

6th Nerve Palsy “ Esotropia (inward turn)
and limited abduction “

3rd and 4th nerve palsies respond to
prism and / or occlusion only, but 6th
nerve palsy can be assisted with
oculomotor exercises:

Cranial nerve palsy	Exam findings – evidence of incomitance		
	Direction of gaze ←	Primary position	→ Direction of gaze
Right 3rd nerve palsy	 Smaller angle of horizontal squint	 Right eye turns downwards and outwards	 Unable to adduct right eye Larger angle of squint Double vision further apart
Right 4th nerve palsy	 No obvious squint	 Right eye turns upwards and outwards	 Right eye elevates more as it moves medially Double vision further apart
Right 6th nerve palsy	 Unable to adduct right eye Larger angle of squint Double vision further apart	 Right eye turns medially	 Able to adduct right eye No obvious squint

Gentle Eye Stretches

With your good eye covered, and your head straight, look at your outstretched thumb held inwards slightly from straight ahead. Move your arm and thumb slowly towards the middle or even past it until you feel your eye become “tight”, and you feel you are not looking it, hold looking that way for a count of 10.

Do this 10 times, and try to do 3-5 sessions a day.

Fast Jump Eye Movements

Cover your left eye, and with your head straight, look at your outstretched left thumb held in front of you. Look to the right past your nose, then:

Jump your eye back to the thumb (without moving your head) and hold for 10 seconds. Then jump your eye back to the right, and repeat.

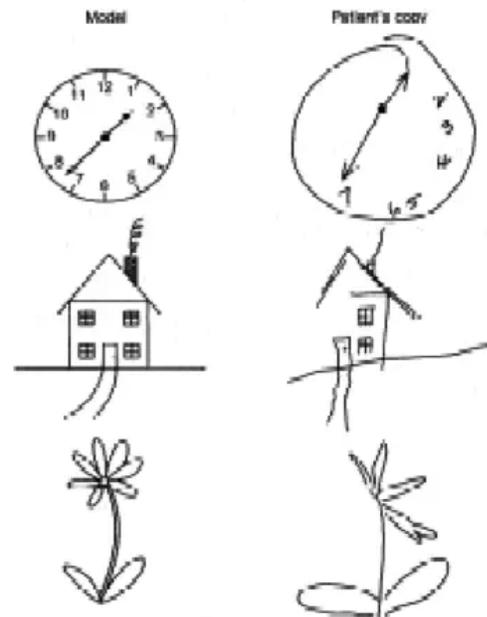
Do this 10 times, and try to do 3-5 sessions a day.

Visual Neglect

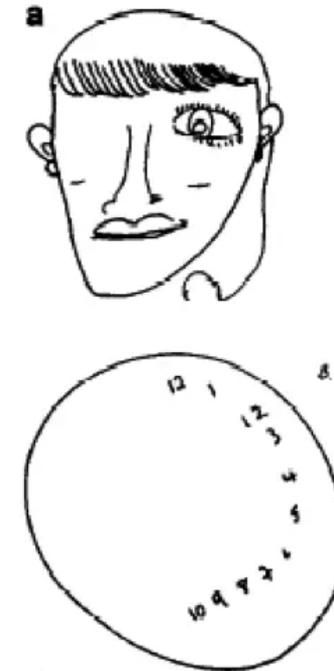
Visual neglect (visual hemi-inattention) is a neurological disorder of attention in which patients exhibit a lack of response to stimuli in one half of their visual field that cannot be explained by primary damage to the visual geniculostriate pathways.

It is part of the broader hemispatial neglect syndrome which frequently occurs following cerebral injury to the right parietal lobe and almost always affects the hemisphere contralateral to the cerebral lesion. Frequently seen in the context of cerebrovascular disease.

Copying:



Spontaneous drawing:



Neglect may manifest as personal, extra-personal, motor, or sensory inattention.

Visual neglect is the most common and most striking manifestation of neglect.

Contralesional visual neglect is frequently seen in the context of hemiplegic stroke, and represents a major source of morbidity, frequently impeding rehabilitation and predicting poor functional outcomes. Patients are often unaware of their deficit (anosognosia), further complicating rehabilitation.

Also useful in some cases: Peli and / or Spot Prism

Severe visual neglect also requires careful clinical evaluation to distinguish from homonymous hemianopia, as both can present with visual field defects on confrontation and standard visual field testing.

Mild visual neglect can present with normal visual fields on confrontation, requiring more detailed testing to identify the deficit. Visual neglect may coexist with visual extinction and homonymous hemianopia, complicating the diagnosis.

Nystagmus:

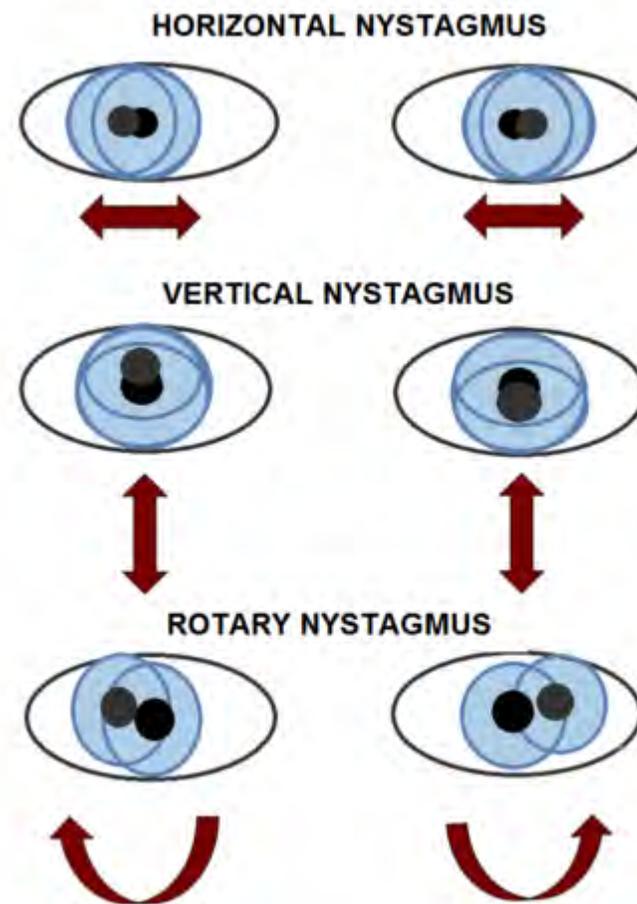
Many forms of Nystagmus

Most commonly with head injuries and stroke – end point nystagmus

Oscillopsia = shaking of images

No tx for oscillopsia, and nystagmus can resolve to a degree

Patients often adopt compensatory head posture to view at “Null Point”



Photosensitivity

Pattern Glare

“Visual Snow”

Pseudomyopia and accommodative dysfunction

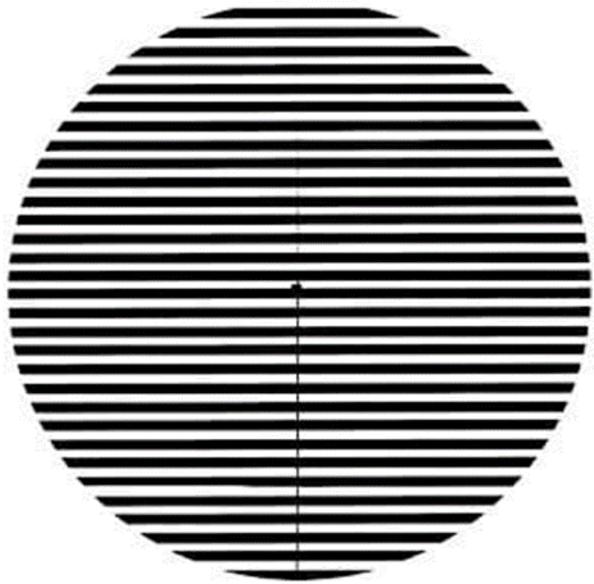
Photophobia – Spectacle Tints

More specifically: FL41 (Neurological Tint) Used in a multitude of conditions

Blepharospasm, Visual Snow, Post TBI sequelae

CALM!!





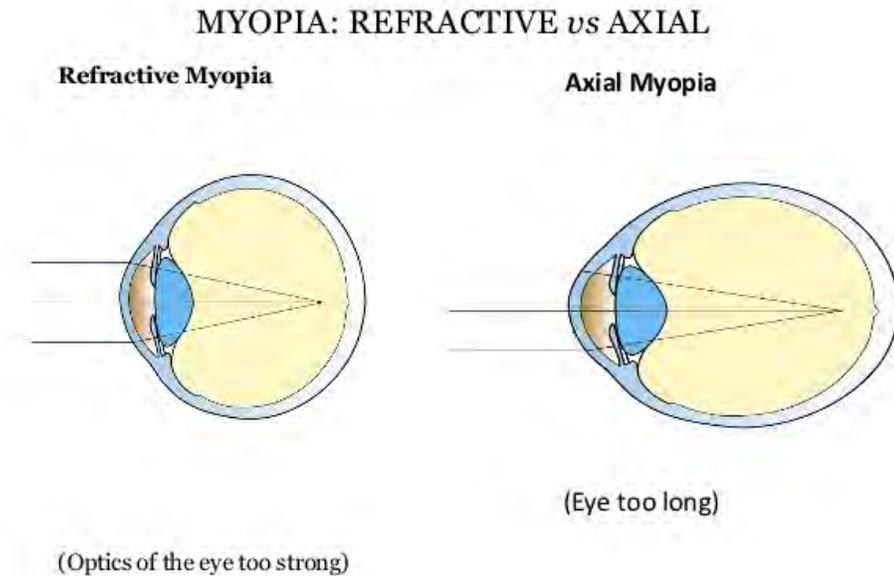
Pseudo myopia and accommodative dysfunction

Many Neuro patients demonstrate a myopic refractive change following Traumatic Brain Injury.

This apparent myopic shift disappears with cycloplegia, yet stubbornly reappears as soon as the pharmaceutical effect wears off.

Shift is secondary to an irritative lesion that affects the parasympathetic innervation, resulting in ciliary body contracture.

The dilemma for the clinician is whether to provide the immediate relief of clear distance vision by prescribing additional minus lenses, or to work toward attempting to re-establish the baseline refractive error accommodative system, and refractive corrections.



Please rate each behaviour.

How often does each behaviour occur? (circle a number)

EYESIGHT CLARITY

Distance vision blurred and not clear -- even with lenses

Near vision blurred and not clear -- even with lenses

Clarity of vision changes or fluctuates during the day

Poor night vision / can't see well to drive at night

VISUAL COMFORT

Eye discomfort / sore eyes / eyestrain

Headaches or dizziness after using eyes

Eye fatigue / very tired after using eyes all day

Feel "pulling" around the eyes

DOUBLING

Double vision -- especially when tired

Have to close or cover one eye to see clearly

Print moves in and out of focus when reading

LIGHT SENSITIVITY

Normal indoor lighting is uncomfortable – too much glare

Outdoor light too bright – have to use sunglasses

Indoors fluorescent lighting is bothersome or annoying

DRY EYES

Eyes feel "dry" and sting

"Stare" into space without blinking

Have to rub the eyes a lot

DEPTH PERCEPTION

Clumsiness / misjudge where objects really are

Lack of confidence walking / missing steps / stumbling

Poor handwriting (spacing, size, legibility)

PERIPHERAL VISION

Side vision distorted / objects move or change position

What looks straight ahead--isn't always straight ahead

Avoid crowds / can't tolerate "visually-busy" places

READING

Short attention span / easily distracted when reading

Difficulty / slowness with reading and writing

Poor reading comprehension / can't remember what was read

Confusion of words / skip words during reading

Lose place / have to use finger not to lose place when reading

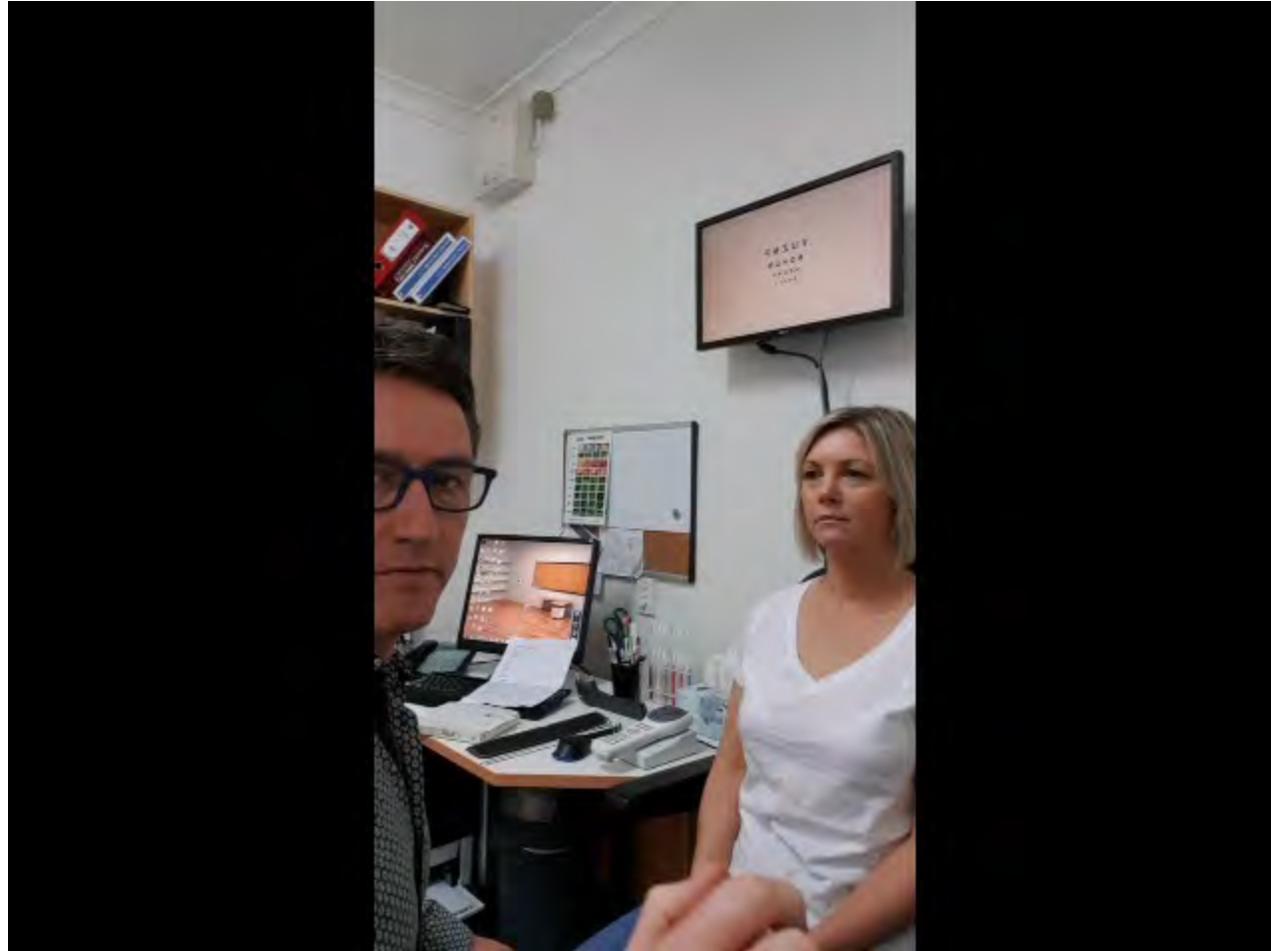


Visual rehabilitation and facilitation of lifestyle

Optical corrections :

- Full time spectacles
- Patching
- Partial occlusion
- Prismatic corrections
- Neurological tint - INTUITIVE COLOURIMETRY (Visual Snow)
- Vision therapy – Nerve palsies, oculomotor imbalance
- Virtual Reality Vision Therapy
- Counselling
- Setting realistic expectations
- Regular reviews





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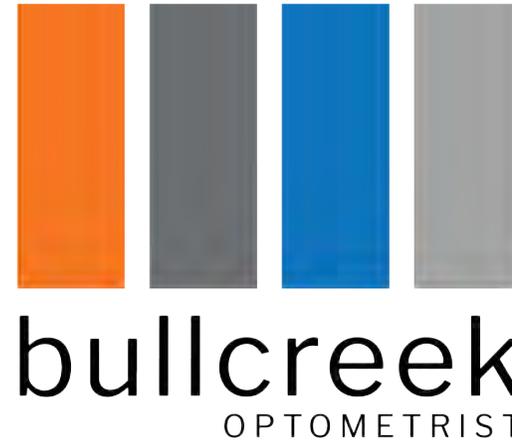
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