

Concussion and the Eyes

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The Visual System

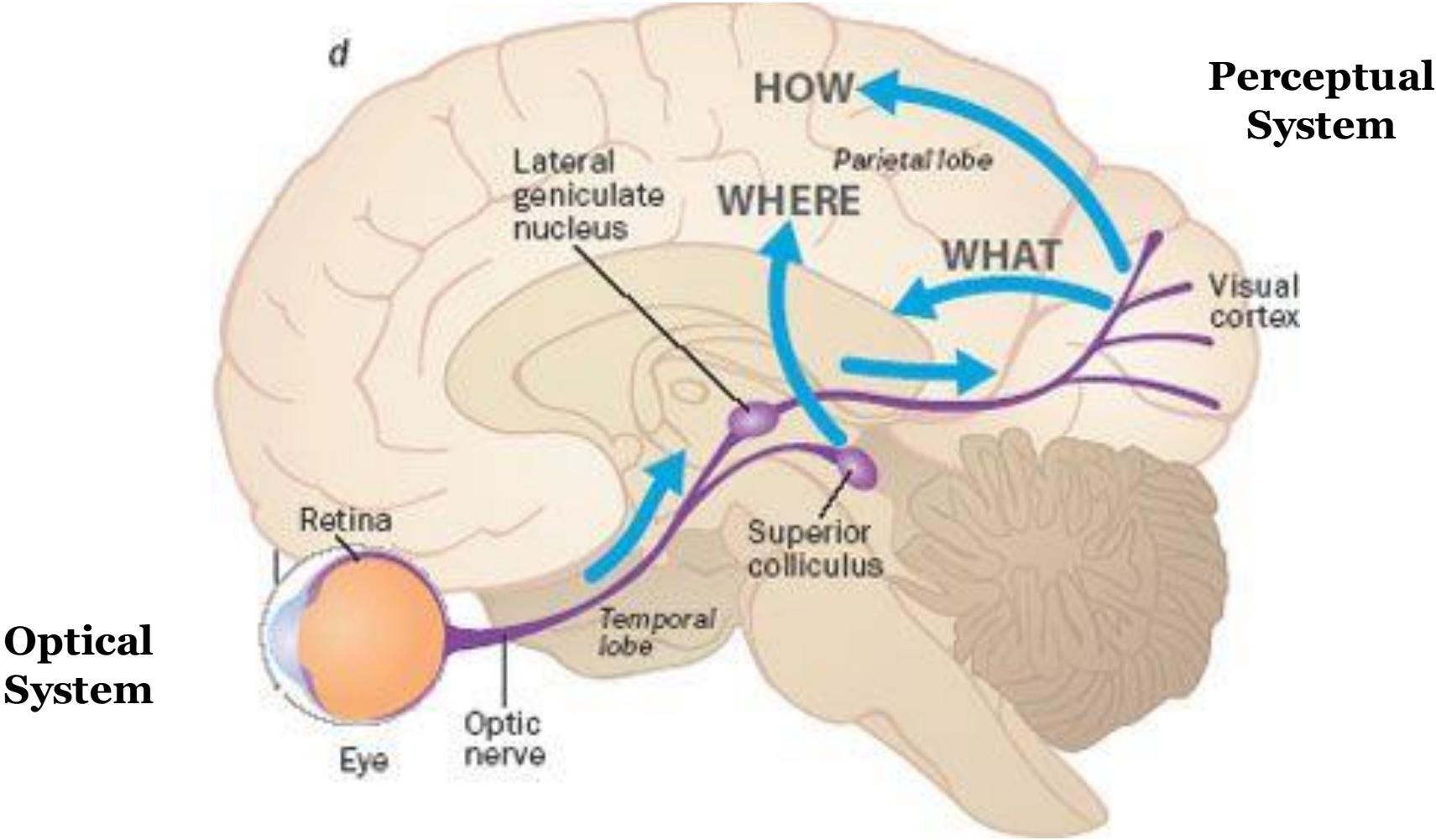
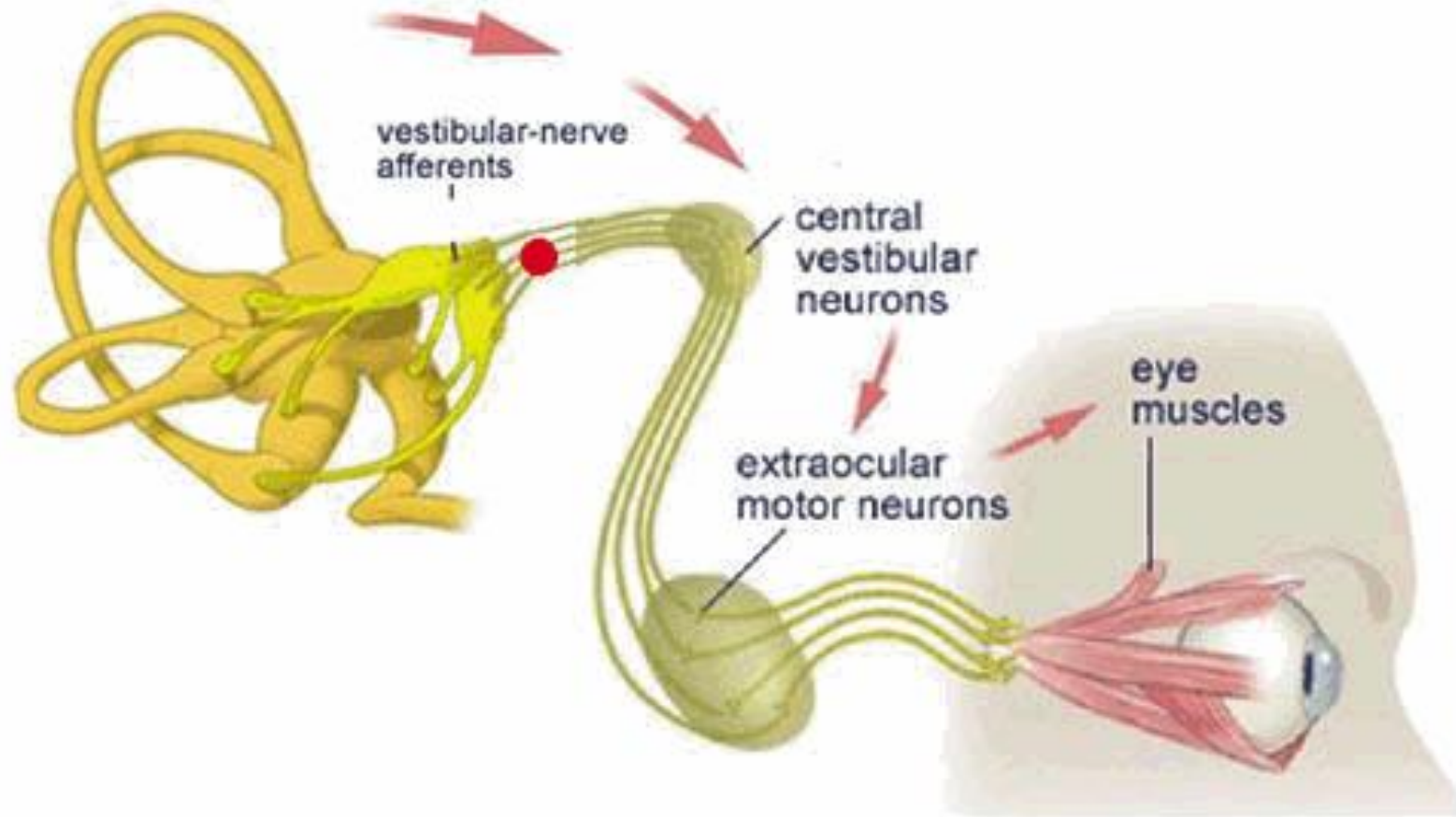


Image: Press LJ. Who, What, Where, and How in the Visual System. The Vision Help Blog; <https://visionhelp.wordpress.com/2018/07/03/who-what-when-where-and-how-in-the-visual-system/>

The Vestibular System



Headache
Irritability
Tinnitus
Dizziness
Sensitivity to noise
Poor memory
Trouble reading
Nausea
Trouble focusing
Sleep disturbances
Balance impairments
Eye strain
Restlessness
Fatigue
Reduced reaction time
Poor coordination
Poor concentration
Light sensitivity
Impaired judgment
Depression
Frustration
Double vision
Blurry vision

Sensitivity to smells

- **Up to 90% patients experience vision symptoms after concussion**
- **The presence of vision and vestibular symptoms are predictive of prolonged concussion recovery**

1. Master CL *et al* (2018) *Clin J Sport Med* 28(2):139-145
2. Ciuffreda KJ *et al* (2007) *Optometry* 78:155-161
3. Brahm K *et al.* (2009) *Optom Vis Sci* 86(7): 817-825
4. Goodrich G *et al.* (2013) *Optom Vis Sci* 90(2): 105-112

- **Common vision problems include:**

- Headaches, focusing issues, reading difficulties, concentration difficulties
- Light sensitivity, motion sensitivity, difficulty tracking objects, pain with eye movements
- Vestibular issues (balance, dizziness), issues with spatial attention

- **Less common:**

- Blurry vision, double vision
- Visual field loss, pupil changes, issues with dark adaptation

1. Master CL *et al* (2018) *Clin J Sport Med* 28(2):139-145
2. Ciuffreda KJ *et al* (2007) *Optometry* 78:155-161
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Focusing Issues (Accommodation Deficits)

Failing to clean off your desk before lunch not only raises the risk of salad dressing spilling onto your work, but it could also increase your chances of getting sick. A new report shows that close to half of Americans don't clean their desks before eating at them, and a third don't wash their hands, which may foster the spread of infectious diseases like colds and flu.

Due to a shortage of the flu vaccine this year, health officials have urged the public to take measures to reduce their risk, and researchers say improving at-work hygiene and hand washing habits could have a major impact in reducing sick days. "Desks, phones, door knobs, conference tables, fax machines and other common workplace areas can be breeding grounds for bacteria-spreading germs," says Brian Sansoni, spokesman for the Soap and Detergent Association, in a news release.

Focusing Issues (Convergence Deficits)

The consumption of soft drinks by American youth is increasing. National dietary surveys show that carbonated soft drink consumption more than doubled in youths aged 6 to 17 from about 55 ounces per day in 1977-78 to 112 ounces in 1994-98, the most recent years for which national data is available. Adolescent boys' soft drink consumption more than tripled during those years.

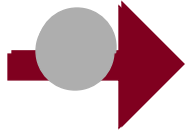
There are at least two negative results to this soft drink explosion. First, the use of soft drinks is likely related to the rise in childhood obesity. A variety of studies suggest that we don't eat fewer calories from other sources when we increase calories from beverages. If a child drinks 9 to 10 ounces of a soft drink, that's equivalent to almost 1200 calories.

Eye Movement Problems

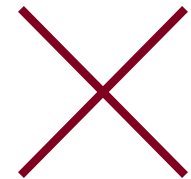
Fixations



Pursuits



Saccades



- **Optometrists can help determine if vision deficits are present**
 - Structural assessment (routine eye exam) with dilation
 - Visual function assessment, includes accommodation, convergence, and eye movement testing

- **Post-concussion vision deficits can often be treated with glasses and/or vision therapy exercises**

1. Master CL, Master SR, Wiebe DJ, et al. Clin J Sport Med. (2018) 28(2):p 139-145.

Concussion in Para Athletes

Canadian Blind Sports Association – Concussion Resources

<http://canadianblindsports.ca/resources/concussion-and-visual-impairments/>

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Concussion in Athletes with Vision Impairment

- **Concussion incidence in Para sport is comparable to able-bodied sport**
 - May even be higher in athletes with vision impairment
- **Concussion in Para Sport (CIPS) group made recommendations to improve Para athlete concussion assessment and management**

CIPS Concussion in Para Sport Position Paper

<https://bjsm.bmj.com/content/55/21/1187>

1. Weiler R, Blauwet C, Clarke D, et al. British Journal of Sports Medicine 2021;55:1187-1195.
2. Fagher K, Jacobsson J, Timpka T, Dahlström Ö, Lexell J. BMC Sports Sci Med Rehabil. 2016 Aug 30;8(1):28.

Concussion in Athletes with Vision Impairment

- **Optometric assessment of athletes with vision impairment and concussion is of critical importance**
 - Identify whether vision deficits are due to the concussion or pre-existing visual condition

Canadian Blind Sports Association – Concussion Resources

<http://canadianblindsports.ca/resources/concussion-and-visual-impairments/>



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Thank you!



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