SO2D01

Eyes on Vision

Tutorial 1

Dr Jennifer Bian

Office: HJ507 Tel: 3400 2798

Email: jingfang.jf.bian@polyu.edu.hk

Please Mark Your Attendance for Tutorial 1

Learning Outcomes

Upon completion of the subject, students will be able to:

a. acquire a general knowledge of the **human eye structures and functions**

b. estimate the **resolution capability of the human eye** and describe **how vision can be measured**

c. recognize how deficiency in **depth perception and color vision** will affect our daily lives

d. identify **common eye conditions** and **eye diseases including refractive errors and ways of corrections**

e. apply approaches to **protect the eyes from injury, improve general eye hygiene and take good care of the eyes**

f. use different strategies to **plan, design, create, and present information** learned on a topic of interest (i.e. on eyes or vision)

g. evaluate information from a variety of sources and **debunk myths about the eyes and vision**

MOOC Module 1 - Structures and Functions of the Eye

Virtual Lab

1.4.1 Using the SEE 3D model

Bookmark this page

Earlier in this module, to help you understand the structures and functions of the eye, you watched some short animations created using the **SEE (Study Eyes Easy) 3D model**.

In this section, you can download your own copy of the model. You will then use it to further explore the structures and functions of the eye and complete tasks to assess your learning.

There are ten tasks in total. Each task carries one point and counts towards your final grade for this course. You can attempt each task twice.

First, download and install the model from the App Store:

SEE Study Eyes Easy App

Store Mac iPad iPhone Watch AirPods TV 與家居 Apple 獨家 配件 支援服務

App Store 預覽

開啟 Mac App Store 購買和下載 App。

Study Eyes Easy 4+

The Hong Kong Polytechnic University

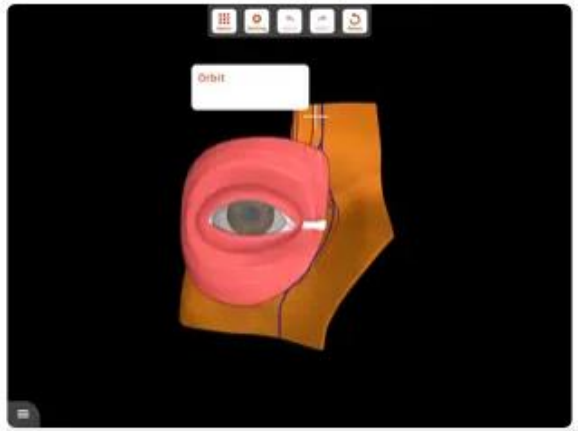
專為 iPad 設計

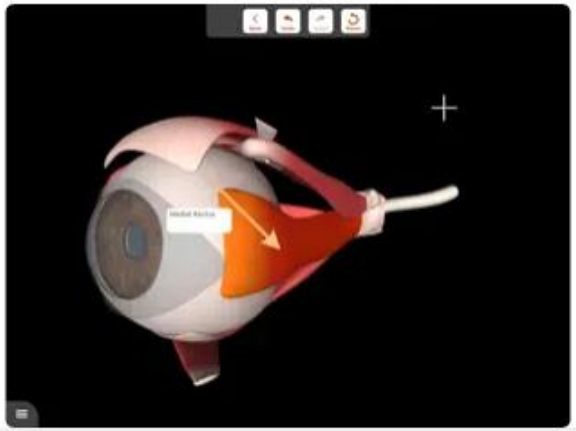
★★★★★ 5.0 • 1 個評分

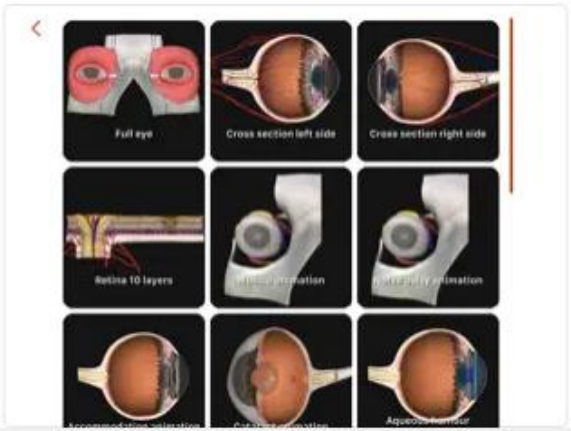
免費

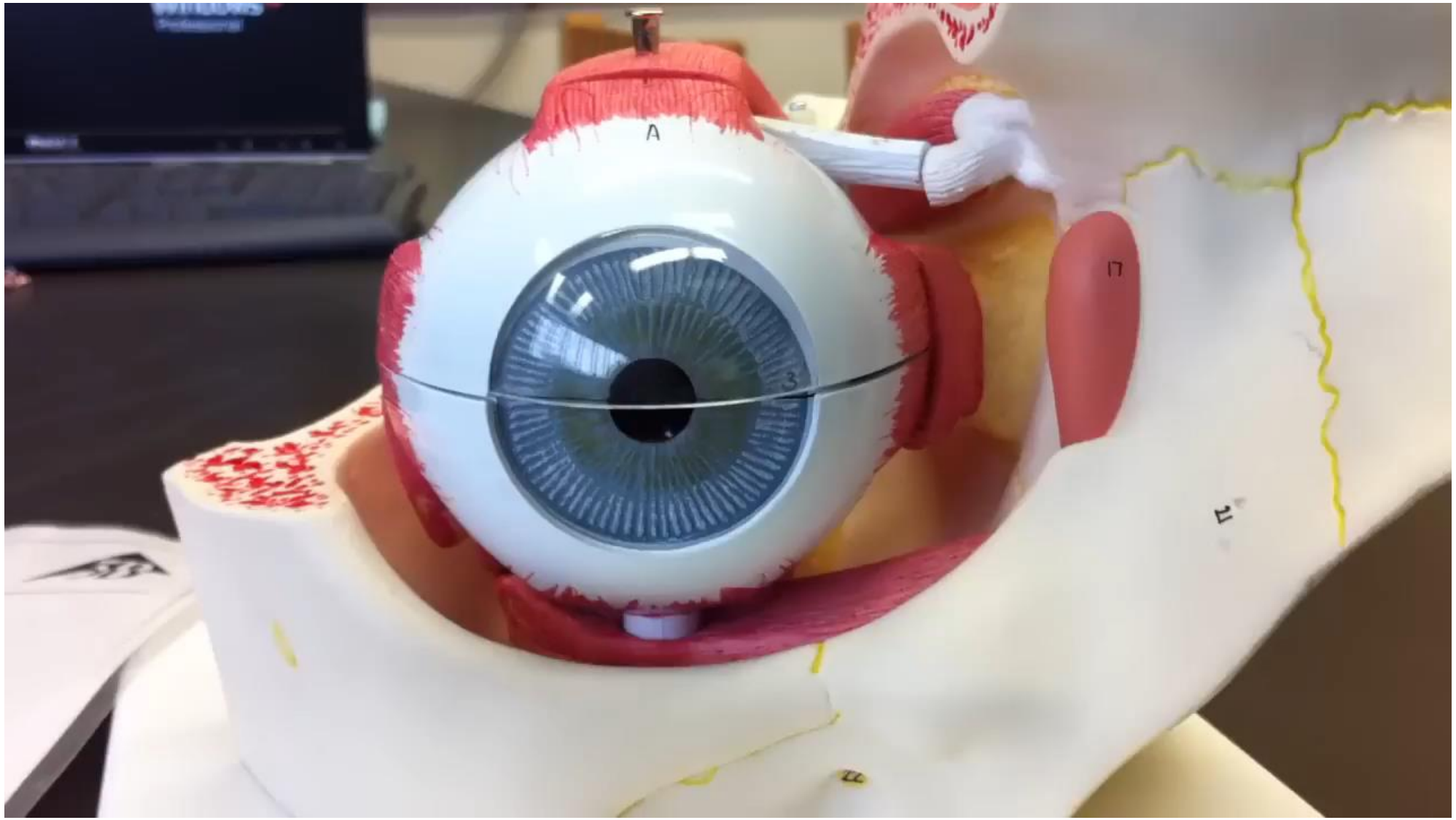
Reminder: If you don't have an iPhone or iPad, we will provide you with a PC or Mac computer version. Please email Dr. Neuville/Dr. Yu at somooc@polyu.edu.hk with Subject " **Request for SEE Eye Model computer version**".

螢幕截圖 iPad iPhone

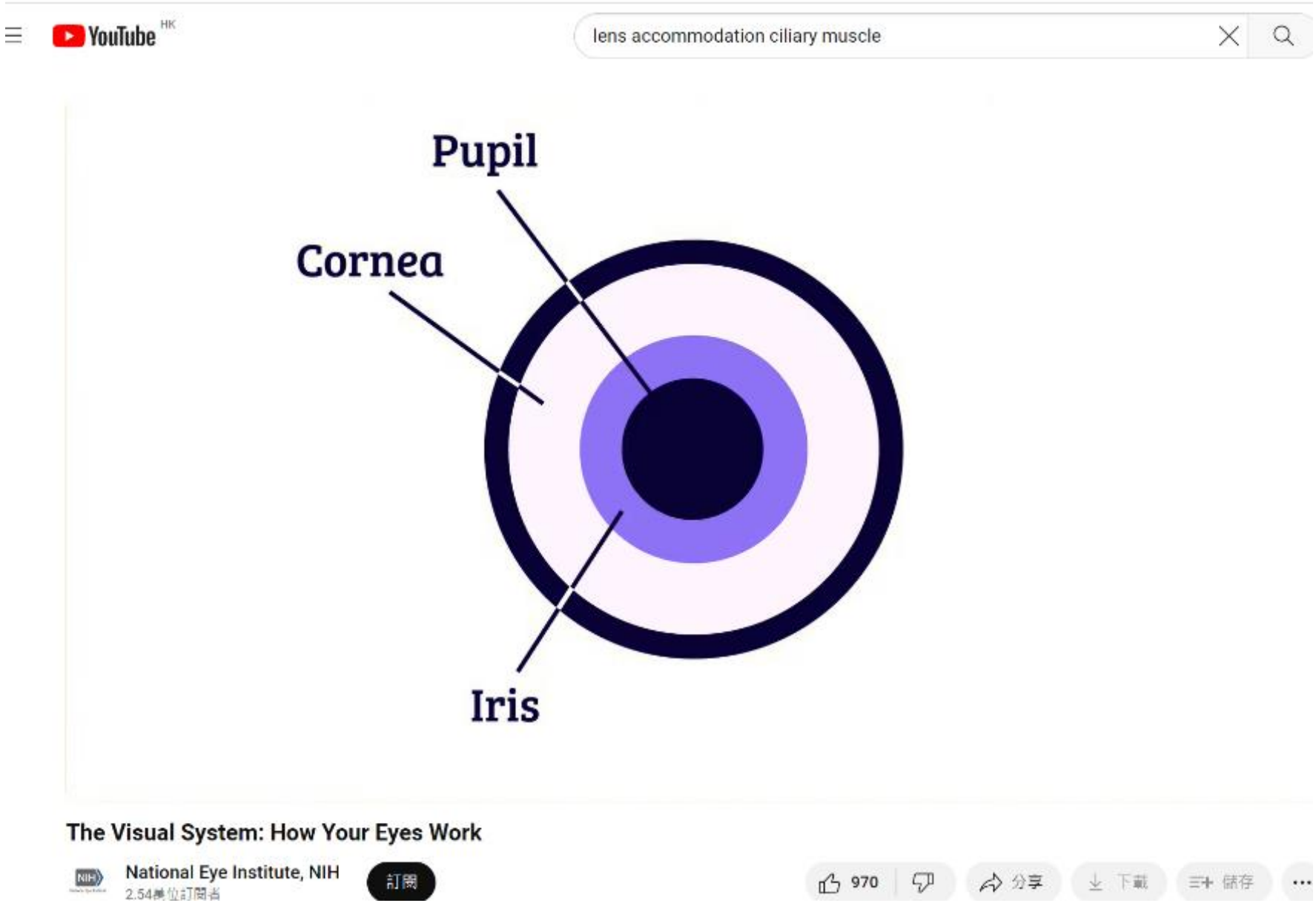








https://www.youtube.com/watch?v=TXFt1Ikl__I&ab_channel=DannyD



https://www.youtube.com/watch?v=TY1giZgddAs&ab_channel=NationalEyeInstitute%2CNIH

Questions on Discussion Forum

Add response

eyes roll exercise

4d

May I know if eye rolling exercise really helps the eye's balls sensitivity?

Related to Module 1: Structures and functions of the eye / 1.5 Knowledge exchange / 1.5.1 Knowledge exchange

Showing 2 responses Newest first

2d

I believe yes. Eye rolling exercise helps to counteract presbyopia (eyes become less sensitive and flexible as age grows).

3d

Hiii ~ In my opinion, the answer is right and helpful. eye rolling exercise is beneficial to exercise the six muscles that manage the eyeball and enhance the extension of the six muscles that control eye movement, which is helpful for eye movement and eye sensitivity. The eye muscles need to be used and adjusted as much as any other muscle. Just like the cause of myopia, because we often stare at something near for a long time, the muscle contraction ability is reduced, forming myopia, so often doing eye rolling exercise should be helpful to the flexibility and sensitivity of our eyes. If I say something wrong, welcome to discuss and correct.

Question about eye exercises

1d

I would like to ask apart from the eye-rolling exercise, are there any other exercises that could relieve the eye pressure?

Related to Module 1: Structures and functions of the eye / 1.5 Knowledge exchange / 1.5.1 Knowledge exchange

Showing 2 responses Newest first

2h

You can also do eye exercises by pressing the corresponding facial acupoint.

1d

Yes, there are other exercises that can help relieve eye pressure.
For example, eye massage is one of them and it helps to reduce eye strain and improve circulation.

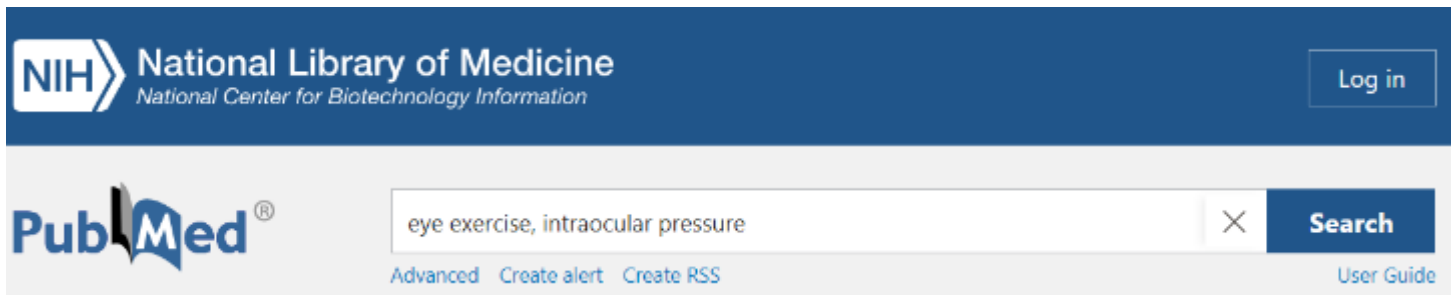
Published: 06 July 2007

Effect of ocular massage on intraocular pressure and corneal biomechanics

A K C Lam & D Chen

Eye **21**, 1245–1246 (2007) | Cite this article

Forty subjects (76%) demonstrated IOP drop >1 mmHg (mean±SD=3.73±1.53 mmHg; maximum reduction: 7 mmHg). Clinically, digital ocular compression through the eyelids for several minutes may be enough to reduce the IOP. The central corneal thickness was not



Healthcare (Basel). 2022 Jun 26;10(7):1196. doi: 10.3390/healthcare10071196.

Intraocular Pressure Fluctuation during Aerobic Exercise at Different Exercise Intensities

Toshihiro Kawae [1], Takuo Nomura [2], Daisuke Iwaki [3], Yuki Nakashima [3], Kenichi Fudeyasu [3], Hiroaki Kataoka [4], Tomoyasu Ishiguro [1], Hiroaki Kimura [5]

Affiliations + expand

PMID: 35885722 PMCID: PMC9315960 DOI: 10.3390/healthcare10071196

Free PMC article

Abstract

Few studies have examined the effects of different aerobic-exercise intensities on intraocular-pressure (IOP) changes. This may be important for eye diseases that are impacted by IOP or its fluctuation, including glaucoma, and diabetes that is complicated by diabetic retinopathy. We investigated the effects of low-, moderate-, and high-intensity exercise on IOP in healthy subjects. A submaximal cardiopulmonary exercise test was performed in 18 healthy male subjects, and the maximal oxygen uptake was calculated. The subjects then exercised for 20 min at 30%, 50%, and 70% ·VO_2 of maximal oxygen uptake, and their IOP was measured at rest and every 5 min during exercise. Oxygen uptake was monitored using an expiratory gas analyzer during exercise to maintain accurate exercise intensity and adjust exercise load. Oxygen uptake during exercise was significantly higher at all intensities from 5 to 20 min than at rest. IOP was significantly lower at 70% exercise intensity from 5 to 20 min than at rest. A negative correlation existed between IOP and ·VO_2. IOP remained unchanged during low- and moderate-intensity exercise but significantly declined during high-intensity exercise compared with that at rest. Although various factors, such as β-blockers, are involved in IOP decline at rest, a different mechanism is involved in IOP decline during exercise.

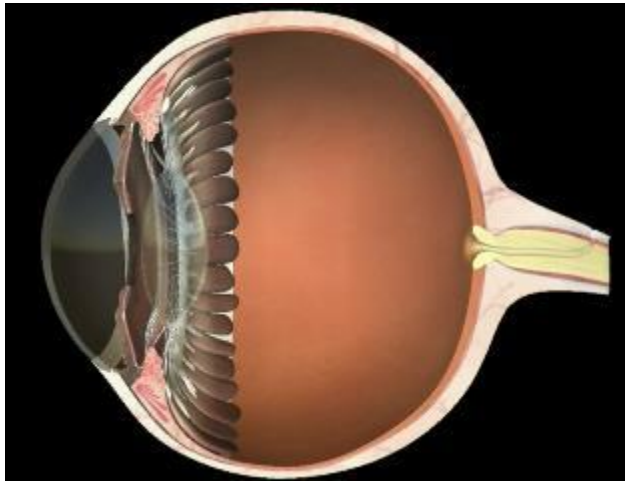
Question about the blind spot

1d

What causes the blind spot and why do we generally not notice it?

1d

Optic nerve causes it since there are no photoreceptors in the optic nerve head.



Question about the blind spot

2h

I have known that the position of the optic nerve determines the blind spot. Everyone has the blind spot. However, is the size of the blind area different for everyone?

Could problems with the blood vessels inside the eye be a cause of blindness?

3d

Could problems with the blood vessels inside the eye be a cause of blindness? For example, you start to see black dots that block your view, but they're actually blood vessels.

Related to Module 1: Structures and functions of the eye / 1.5

1d

Yes, problems with the blood vessels inside the eye can potentially cause blindness. Conditions such as diabetic retinopathy, macular degeneration, and retinal vein occlusion can affect the blood vessels in the eye and lead to vision loss. Seeing black dots that block your view could be a symptom of these conditions, where the blood vessels may be leaking or causing damage to the retina.

Eye fatigue

13h

Eyes feel tired and dry after watching electronics for a long time. Is it specifically caused by the eye muscles or the nervous system, and what measures can be taken to relieve eye fatigue.

Question about eye maintains its shape

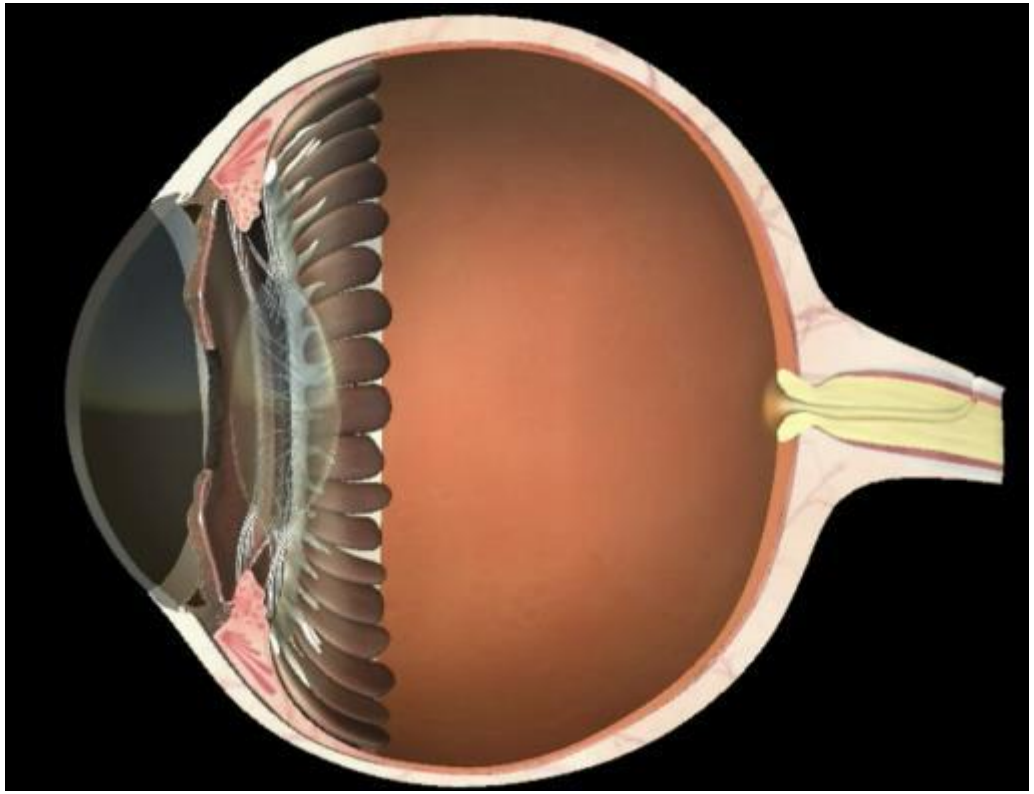
3h

What are the sophisticated mechanisms and physiological processes that contribute to the structural integrity and shape maintenance of the eye?

Questions about movement of eye

4h

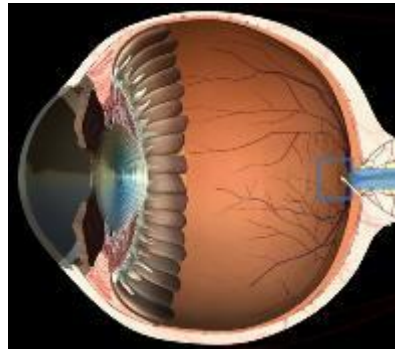
I am confused about how to distinguish eye extorts and eye intorts when moving the head to the right or to the left

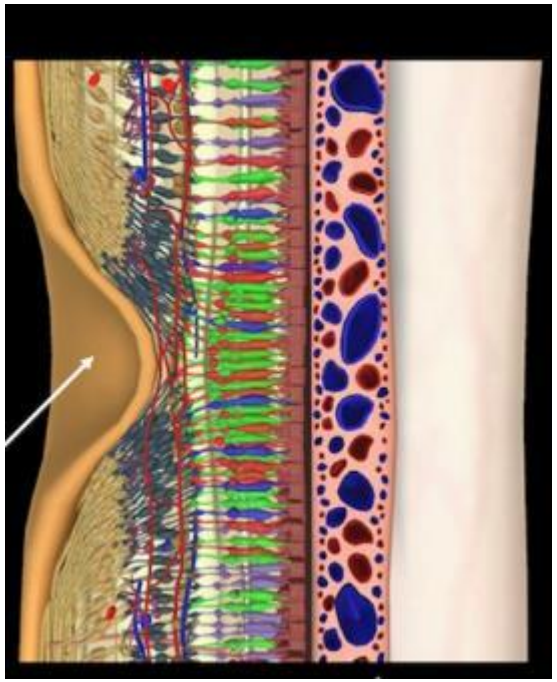


question about blood vessels

22h

I want to ask why after looking at the sun, we can see the blood vessels in our eyes.



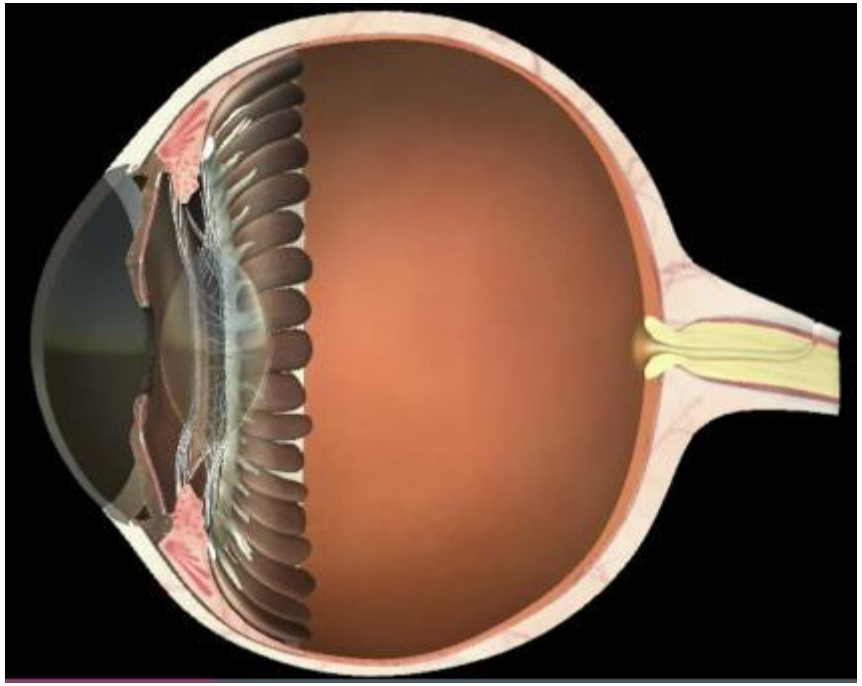


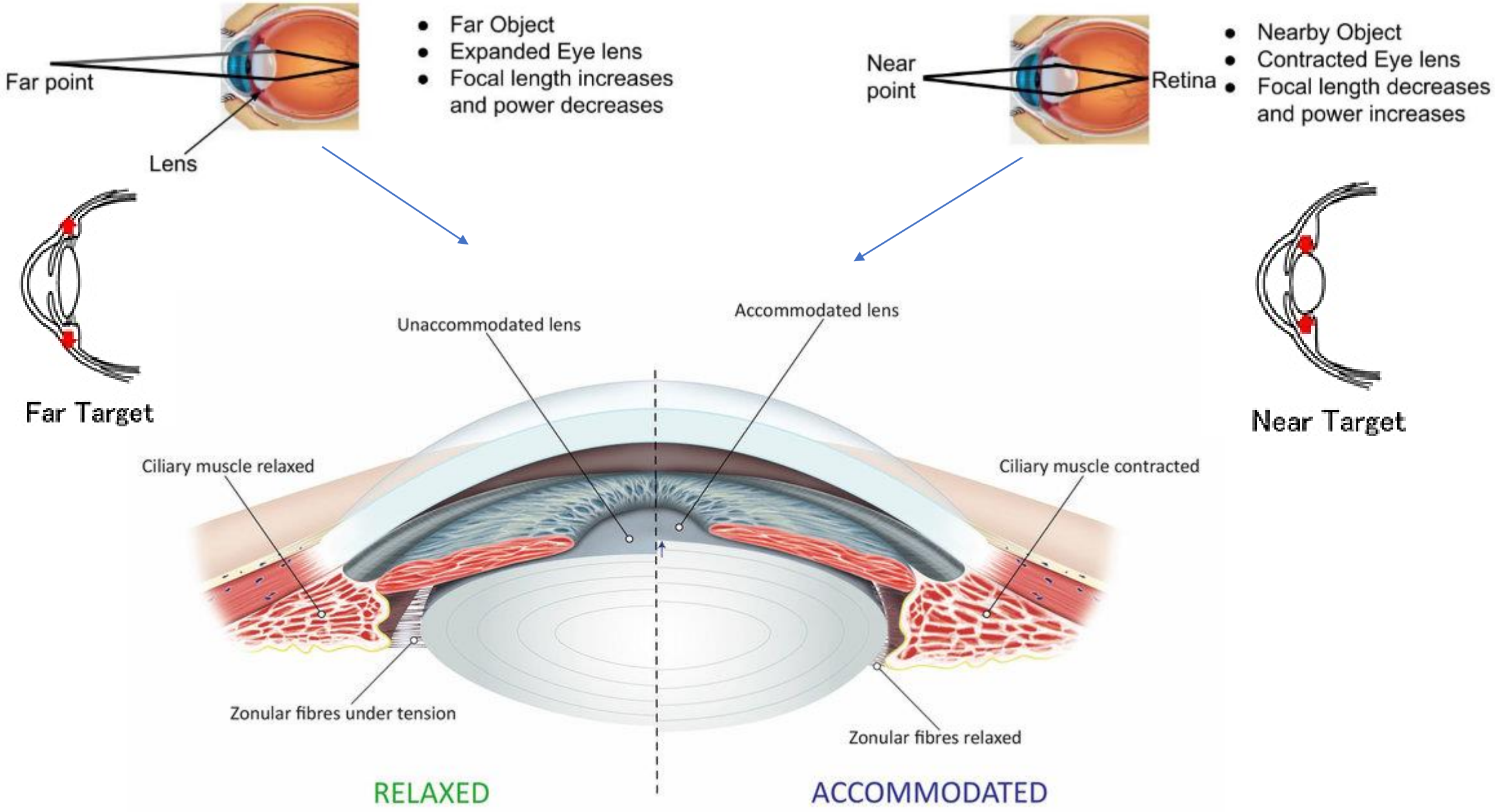
Purkinje tree (Entoptic phenomenon): when bright light enters the eye and illuminates the retinal blood vessels, casting shadows onto the retina.

Question about lens in the eye

tjcathy1119 1d

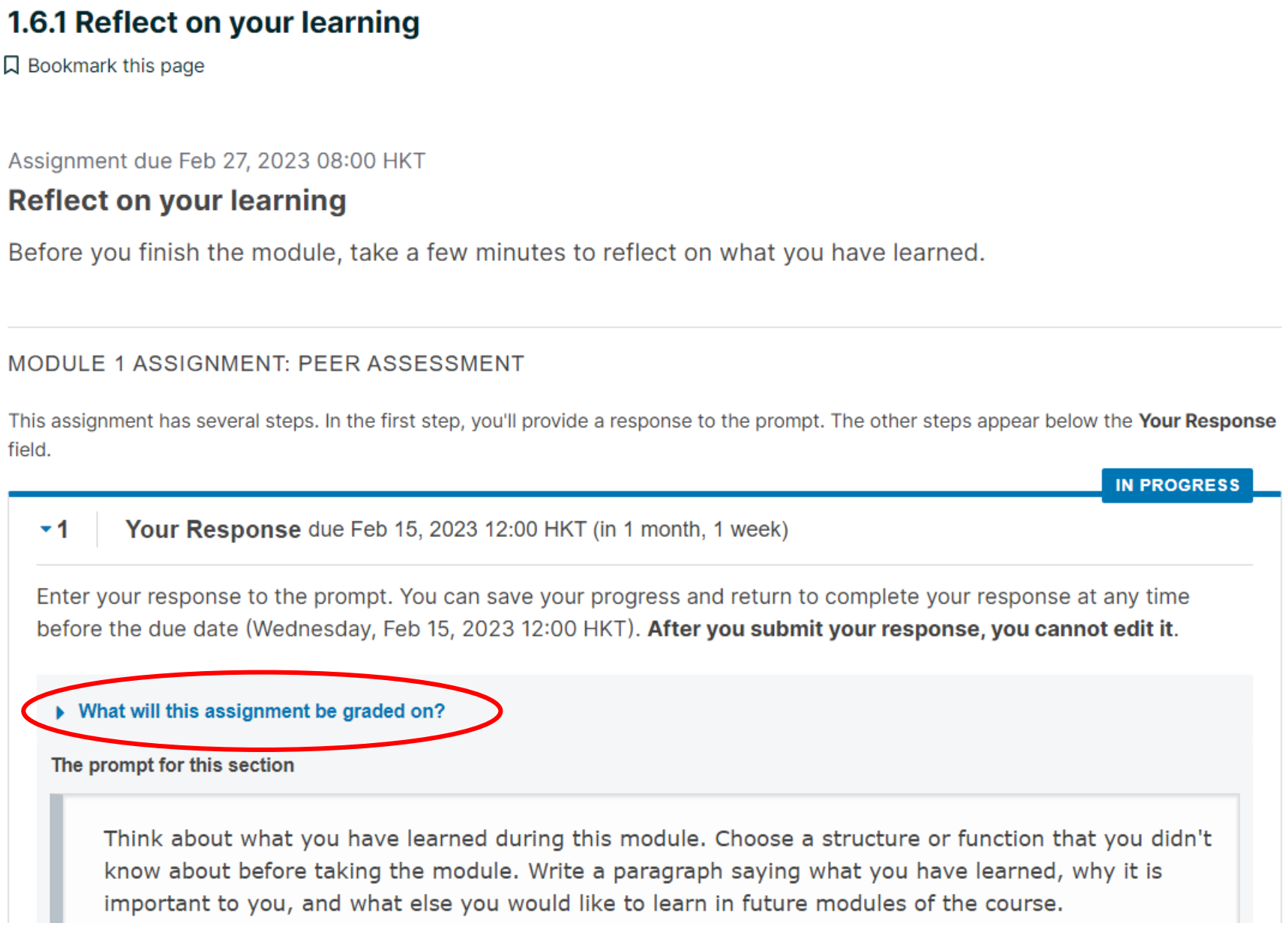
How does the lens in the eye change its shape to allow for focusing on objects at different distances, and what role does it play in the process of accommodation?





Logan, N. S., Radhakrishnan, H., Cruickshank, F. E., Allen, P. M., Bandela, P. K., Davies, L. N., Hasebe, S., Khanal, S., Schmid, K. L., Vera-Diaz, F. A., & Wolffsohn, J. S. (2021). IMI Accommodation and Binocular Vision in Myopia Development and Progression. Investigative ophthalmology & visual science, 62(5), 4. https://doi.org/10.1167/iovs.62.5.4

Peer Assessments



Peer assessments for MOOC assignments. You may be graded by online learners from all around the world!

IN PROGRESS (3 OF 3)

2 Learn to Assess Responses

Learning to Assess Responses

Before you begin to assess your peers' responses, you'll learn how to complete peer assessments by reviewing responses that instructors have already assessed. If you select the same options for the response that the instructor selected, you'll move to the next step. If you don't select the same options, you'll review the response and try again.

The question for this section

> Think about what you have learned during this module. Choose a structure or function that you didn't know about before taking the module. Write a paragraph saying what you have learned, why it is important to you, and what else you would like to learn in future modules of the course.

The response to the prompt above:

I started this course with only a basic understanding of the human eye, and now I know so much more about it. For me, I think the most 'eye-opening' part of this module was the section on floaters - I had noticed them before but had no clue what they were. Now I know these are just the shadows of particles floating in my vitreous gel. I've always been fascinated by 'Magic Eye' pictures and 3D drawings, so in that part of the course I'm really looking forward to applying some of my knowledge about how visual information is processed.

✔ COMPLETE

2 Learn to Assess Responses

IN PROGRESS (2 OF 2)

▸ 3 Assess Peers

▸ Your Grade: Not Completed

▸ Top Responses

Myths to debunk

1. Contact lenses can get lost behind your eyes

True or False?

Why?

2. If you sneeze with your eyes open, they will pop out.

True or False?

Why?

3. Eyes can be transplanted.

True or False?

Why?

MOOC Module 2 – Assignment

2.6.1 Solve a problem

Bookmark this page

Assignment due Feb 27, 2023 08:00 HKT

Solve a problem

Before you finish the module, take a few minutes to use your knowledge of the resolution of the eye to solve a practical problem.

Earlier in this module, you learned how to measure and record visual acuity. You also learned about the relationship between viewing distance, dot pitch in display screens, and the minimum angle of resolution (MAR).

Imagine someone in your family or a close friend has asked you for advice about buying a new TV or computer monitor. They are trying to choose between a more expensive 4K UHD model and a cheaper 1080p HD model. They have the money to buy a 4K model, but do not want to buy one unless they are sure the screen resolution will be noticeably different from 1080p. They do not want the screen size to be larger than necessary for their viewing distance.

Based on their visual acuity and viewing distance, which screen size and which display option would you recommend?

No class next week (31 Jan)

The whole class should join Tutorial 2 on 7 Feb :

Group A: 4:30-5:20 pm

Group B: 5:20-6:20 pm

Questions or concerns?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吉
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