Glaucoma

In this experiment, the eye disease glaucoma is simulated. Glaucoma refers to a group of eye diseases that are typically characterised by increased pressure in the eye (intraocular pressure) and can lead to damage to the optic nerve, which can ultimately result in loss of vision.

Physics	Light & Optics	Dispersion of light
Biology	Human Physiology	Hearing & Seeing

Difficulty level	Group size	Preparation time	Execution time
-	-	-	-

This content can also be found online at:

https://www.curriculab.de/c/6729f52926998c0002679ed3

Teacher information

Application

The human eye

Glaucoma is an eye disease in which the pressure in the eye increases and damages the optic nerve. This nerve is crucial for the transmission of visual information from the eye to the brain. If the optic nerve is damaged, this can lead to vision loss and, in the worst case, blindness. This disease is often referred to as 'the silent thief of sight'. This is because glaucoma often develops without noticeable symptoms in the early stages and can therefore go unnoticed until vision is already significantly impaired. Regular eye examinations are therefore particularly important in order to recognise and treat glaucoma at an early stage before permanent vision loss occurs.

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Other teacher information (1/2)

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Prior knowledge

The structure of a human eye should be discussed in class beforehand.

Principle

In this experiment, the eye disease glaucoma is simulated. Glaucoma refers to a group of eye diseases that are typically characterised by increased pressure in the eye (intraocular pressure) and can lead to damage to the optic nerve, which can ultimately result in loss of vision.

Other teacher information (2/2)

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Learning objective

Students should develop an understanding of the eye disease glaucoma.

Tasks

- Pupils learn about the eye disease glaucoma.
- With the help of simulation glasses, they find out how the vision of a person with this disease changes.

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Safety instructions

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The general instructions for safe experimentation in science lessons apply to this experiment.

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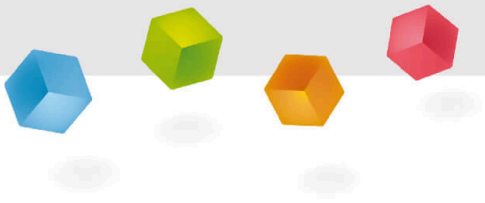

Student information

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Motivation

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The human eye

Glaucoma is an eye disease in which the pressure in the eye becomes too high and damages the optic nerve. This nerve is important because it sends information from the eye to the brain so that we can see. If the optic nerve is damaged, it can lead to vision problems or even blindness.

It is important to know about glaucoma because regular eye examinations can help to recognise and treat this disease at an early stage. This helps to protect your eyesight and ensure that you can continue to see well. By taking care of our eyes and looking after our health, we can avoid problems and preserve our vision.

Tasks

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Simulation glasses

- Find out how the vision of a person with glaucoma changes by wearing simulated glasses.

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Material

Position	Equipment	Item no.	Quantity
1	Simulation glasses eye diseases, set consisting of 5 glasses	64956-00	1

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Procedure

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- Put on the golden simulation glasses to simulate the eye disease "glaucoma" and look around you.
- Take the glasses off again to see the difference.

Simulation goggles "glaucoma" and eye shell

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Report

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Observation

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Click on the following link to see another example of how glaucoma can affect a person's vision.

Move the slider in the centre to the left and right to see the comparison with and without illness directly.

>> Simulation of glaucoma <<

The eye model and simulation glasses

Task 1

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Drag the words into the matching gaps.

Glaucoma is an eye disease in which the _____ in the eye increases and can damage the _____. This nerve is crucial for the _____ of visual information from the eye to the brain. If the optic nerve is damaged, this can lead to loss of vision and, in the worst cases, _____. This disease is often referred to as "the _____ thief of sight". This is because glaucoma often develops without noticeable _____ in the early stages and can therefore go unnoticed until vision is already significantly _____.

impaired
blindness
pressure
transmission
optic nerve
silent
symptoms

Check

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Task 2

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What can happen if the optic nerve is damaged by glaucoma?

- ○ Vision remains unchanged.
- ○ It can lead to loss of vision or blindness.
- ○ This leads to an improvement in vision.

Check

The eye

Task 3

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What is the main cause of damage to the optic nerve in glaucoma?

- ☐ A lack of vitamins.
- ☐ Too high intraocular pressure.
- ☐ An infection in the eye.

Check

The eye

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Slide	Score / Total
Slide 13: Eye disease glaucoma	0/7
Slide 14: Damage to the optic nerve	0/1
Slide 15: Cause of the eye disease	0/2

Total amount 0 / 10

Solutions Repeat

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