

Diabetic retinopathy



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/67178976278770002d59b4f>

PHYWE



Teacher information

Application

PHYWE



The human eye

Diabetic retinopathy is an eye disease that can occur in people with diabetes. It is caused by long-term high blood sugar levels, which can damage small blood vessels in the eye. This can cause vision problems, including blurred vision or even blindness, if not treated early. It is important for people with diabetes to have regular eye examinations to recognise and treat diabetic retinopathy early.

Other teacher information (1/2)

PHYWE

Prior knowledge



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

Principle



Diabetic retinopathy is an eye disease that occurs in people with diabetes. It is caused by damage to the blood vessels of the retina, the light-sensitive part at the back of the eye. During the course of diabetes, high blood sugar levels can damage the walls of these small blood vessels, weakening, blocking or causing them to leak.

Other teacher information (2/2)

PHYWE

Learning objective



Students should develop an understanding of the eye disease diabetic retinopathy.

Tasks



The pupils learn about the eye disease diabetic retinopathy and experience how the vision of a person with this disease changes by wearing simulation glasses.

Safety instructions

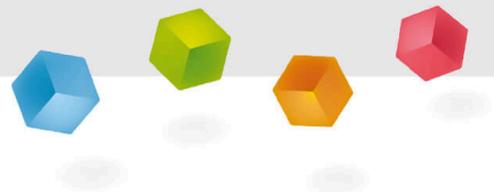
PHYWE



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

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Student information



Motivation

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Blood glucose test

Diabetic retinopathy is an eye disease that people can get if they have diabetes. If someone has diabetes and their blood sugar is too high for a long time, this can damage the small blood vessels in the eyes. This can cause the person to have problems with their vision, such as blurred vision or even blindness. Regular eye examinations are important to recognise and treat this disease early so that you can continue to see well.

Tasks

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Simulation glasses

- Find out how the vision of a person with this disease changes by wearing simulation glasses.

Material

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

Procedure

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Put on the green simulation glasses to simulate the eye disease "diabetic retinopathy" and look around you.

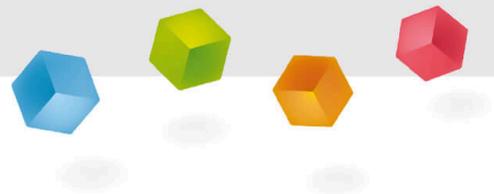
Take the glasses off again to see the difference.



Simulation spectacles "Diabetic retinopathy" and eye half-shell

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Report



Observation

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Click on the following link to see another example of how diabetic retinopathy 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 diabetic retinopathy <<](#)



The eye model and simulation glasses

Task 1

PHYWE

What is diabetic retinopathy?

- A disease of the kidneys in people with diabetes.
- An eye disease that can occur in people with diabetes.
- A skin disease caused by diabetes.

Check

What causes diabetic retinopathy?

- High blood sugar levels over a long period of time.
- Little exercise and poor nutrition.
- Stress and anxiety.

Check

Task 2

PHYWE

Diabetic retinopathy can ...

- damage the small blood vessels in the retina of the eye.
- damage the small blood vessels in the iris of the eye.
- damage the small blood vessels in the cornea of the eye.

 Check

The human eye

Task 3

PHYWE

Drag the words into the right places.

Diabetic retinopathy is an eye disease that can occur in people with [] . It is caused by long-term high [] in the blood and can lead to [] , such as blurred vision or even [] in advanced stages. Regular [] are important to recognise and treat diabetic retinopathy at an early stage.

glucose levels

diabetes

eye examinations

blindness

vision problems

 Check

Slide	Score / Total
Slide 13: Multiple tasks	0/2
Slide 14: Damage to the eye	0/1
Slide 15: Diabetes retinopathy	0/5

Total amount  0/8

 Solutions

 Repeat