



(ENG) The world's oldest sport

Introduction

Step 1 - Motivational Stage

Step 2 - Investigational Stage

Step 3 - Consolidation Stage

Introduction



#Online activity #Experiential learning #Artwork #Simulation
#Sculpture

This activity will help the pupils understand the law of action and reaction and be able to apply this knowledge to familiar phenomena.

They will learn about this law through ancient depictions of sports and some ancient artworks, connecting art, science and sport. They will activate previous knowledge and experiences through artworks and

understand physical phenomena of action and reaction. They will also learn about some of the oldest sport disciplines.

Learning Objectives

- ☐ recall knowledge about ancient art and its connection to the Olympic Games
- ☐ give examples for the law of action and reaction in everyday life
- ☐ interpret Newton's third law
- ☐ differentiate Newton's third law and balance of forces

ACTIVITY DETAILS

Activity Details

Connection of the activity with Art

Ancient Greek art, ancient Egyptian art



Link to local, national School Curriculum —

Forces/ Interaction Act



Equipment required —

- a tennis (or similar) ball.



Duration of activity —

45 minutes



Sources —

Bez nec, B., Cedilnik, B., Gulič T., Lorger J., Vončina, D. (2019). Moja prva fizika 1, samostojni delovni zvezek za fiziko v 8. razredu osnovne šole

Grubelnik L., Zupan D., Gosak M., Markovič R., Ketiš B., Repnik R., Jug, M. (s.a.), Fizika 8, i-učbenik za fiziko v 8. razredu osnovne šole.

Retrieved from: <https://eucbeniki.sio.si/fizika8/index.html>

Photo credit:

Photo 1

Amphora, Archaic Greek, (c. 510–500 BC)

pottery,

black figured amphora, painted, incised,

Height: 41.91 cm,

Public domain

© The Trustees of the British Museum

Source:

<https://www.britishmuseum.org/collection/image/967345001>

The British Museum

Photo 2

Panathenaic amphora, Classic Greek, 367–366 BC,

pottery, black figured amphora, painted, incised,

Height: 64.77 cm,

© The Trustees of the British Museum

<https://www.britishmuseum.org/collection/image/275494001>

The British Museum

Photo 3

Two figures wrestling, Ancient Egyptian art,

Middle Kingdom, 2055–1650 BC,

Limestone, painted,

H 12 cm x W 7,80 cm x D 6,50 cm

© The Trustees of the British Museum

Source:

<https://www.britishmuseum.org/collection/image/54525001>

The British Museum

Photo 4

Reaction and action forces, drawing

Own

Step 1 - Motivational Stage



Start your lesson with a question for the pupils:



"Which sport discipline is the oldest?"

Leave a room for a short discussion, then show them the photos below:



© The Trustees of the British Museum
Amphora, Archaic Greek, c. 510–500 BC, pottery, black figured amphora, painted, incised, Height: 41,91 cm, The British Museum



© The Trustees of the British Museum
Panathenaic amphora, Classic Greek, 367–366 BC, pottery, black figured amphora, painted, incised, Height: 64,77 cm, the British Museum

Then, ask the pupils:



"Which sport's discipline is depicted in the photo?"



“Describe what is happening in the depicted scene”



“How would you describe with one verb, what is a man on the right doing to the leg of the other man?”



“What is the man on the left doing to the shoulder of the other man? Use a single verb.”

Expose this problem to pupils:



*“What is happening in the moment, where we as public are
incapable to predict, which of the men is stronger?”*

- ① Eventually, pupils should use two key verbs for the continuation of the lesson: pull and push

Step 2 - Investigational Stage



STUDENTS' TASKS

1

Task 1

Now you ask your pupils to take off their shoes and walk a little bit in their room.

Ask the pupils:



“While you were walking, could you feel the floor on your feet?”

Ask them, still barefoot, to jump three times.



“While you were jumping, could you feel the floor on your feet?”



“In which case the feeling was stronger?”

Task 2

Take your tennis ball and drop it.




“Why do you think the ball bounces up from the floor?”

Explanation

When two bodies interact, they apply forces on one another. These forces are opposite in direction and equal in magnitude. This is Newton’s third law, which is also called the law of action and reaction.

When the ball hits the floor, it acts on the floor with force, and the floor acts back in accordance with Newton’s third law – the force of the floor is of the same magnitude and measures in the opposite direction.

The same thing happened, when you were walking and jumping on the floor. Your force toward the floor was stronger, when you were jumping, thus you felt the floor more in this case, because the force of the floor was of the same magnitude.

 For every action, there is an equal and opposite reaction.

Task 3

Show your pupils this illustration.



© The Trustees of the British Museum

Two figures wrestling. Ancient Egyptian art, Middle Kingdom, (2055–1650 BC), limestone, painted, The British Museum

You can tell your pupils something about the picture:

This is a mural painting from ancient Egypt. It depicts wrestling. It was painted between the period 2055–1650 BC, so it is much older than both amphoras we saw at the beginning of the lesson. Wrestling is considered to be the oldest sport discipline, as we know of depictions of wrestlers even older than this one from Egypt. In the Lascaux caves in France they discovered cave paintings of people wrestling. Those paintings are considered to be painted more than 15,000 years ago.

All of the artworks you've seen in today's lesson depict wrestling, but there are many differences among them. The one above originates in Egypt; it is a sculpture presenting a different wrestling position.

The first ones originate in ancient Greece, it is an art form, which was specific for ancient Greece. But the first amphora is much older than the second one. It presents a mythological scene with Herakles wrestling Antaios. On the other one, there are two unnamed athletes in a different wrestling position. In Ancient Greece there were a lot of artworks which depicted several different sport disciplines. Not only on amphora but also on temples and reliefs, for example.

Then ask them:



“Compare this picture with those you saw at the beginning of the lesson. Which would you say is the oldest?”

Task 4

Ask the pupils:



“Do you remember why there were so many sports depicted in sculptures, vases and other forms in ancient Greece?”



“Which major event started back then is still popular and occurs nowadays on a worldwide scale?”

- Answer: the Olympic Games

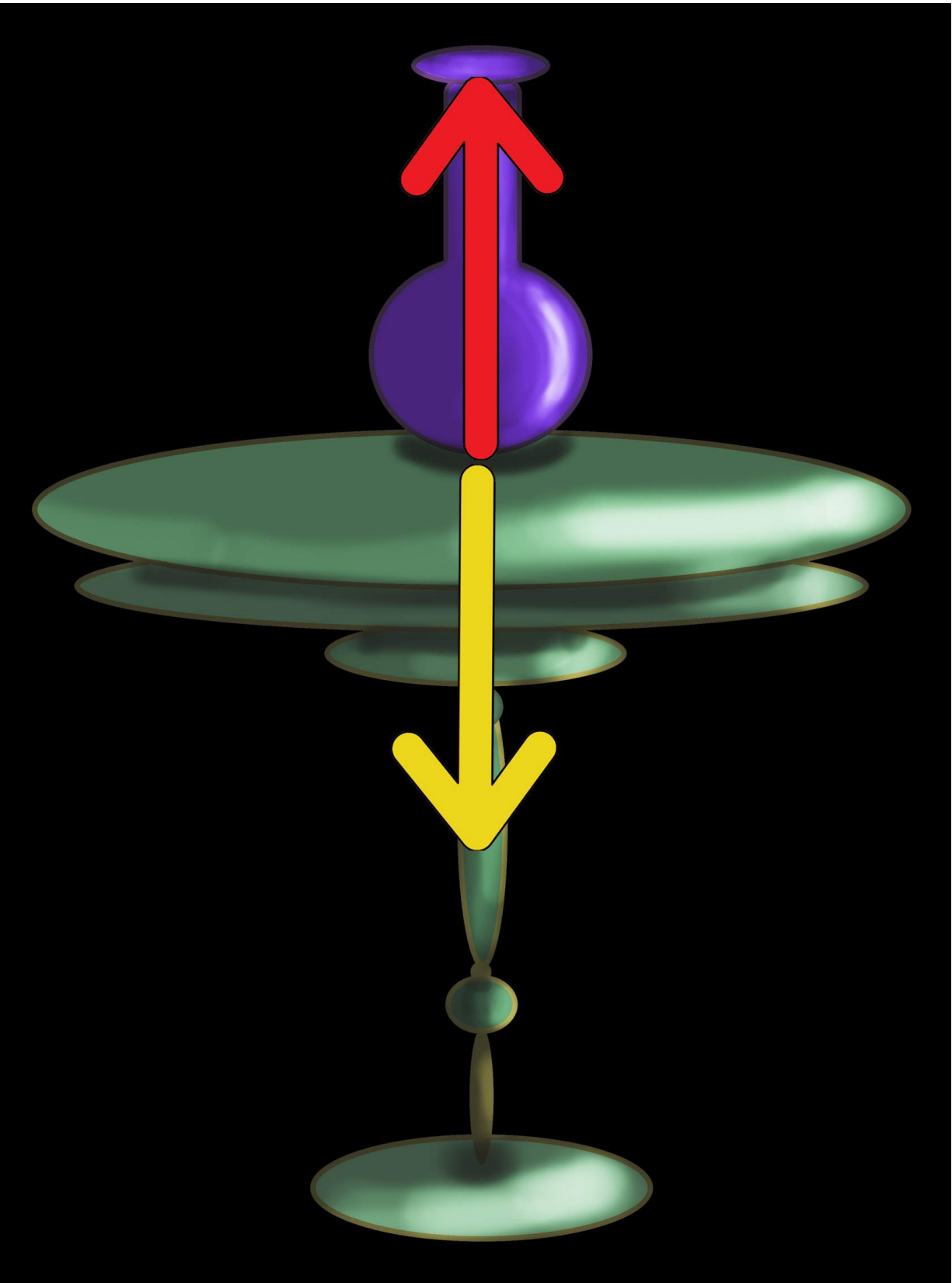
You may also tell pupils the fact that the Arts used to be part of the Olympics during its early years, from 1912 to 1948.

Task 5

Tell the pupils to open their internet browsers and search for at least two statues from ancient Greece that represent different sports disciplines.

Task 6

Show the pupils the illustration below.



Explain to pupils:

Newton's third law applies to the objects in movement, but it also applies to the standstill object.

Ask the pupils:



“Which two forces are shown in the illustration?”

- **Answer: the force of the table surface on the vase (red) and the force of the vase on the table (yellow)**
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① The difference between Newton's third law and Newton's first law is that we observe the balance of forces on individual objects, while Newton's third law applies to two interacting objects. It applies to all objects at every time without exception.

Task 7

Ask the pupils:



"If the law of action and reaction applies to all interacting objects, why can there be a winner in wrestling?"



"If the law of action and reaction applies to all interacting objects, why does the floor stay in the same position, but the ball bounces up?"



"If the law of action and reaction applies to all interacting objects, why is the Earth moving around the Sun, but the Sun doesn't move around Earth?"

- Answer: the effect of the force depends on different other factors. For example, The Sun is a lot more massive than Earth. Therefore, the effect of the force is lower. In wrestling, one of these factors is the individual level of endurance

Step 3 - Consolidation Stage



1. Ask pupils to name and explain 2 examples of Newton's third law from everyday phenomena.
2. Tell pupils to solve additional tasks:

Question 1

Peter and Mark are grabbing each others' hands. Each of them is pulling in an opposite direction. Peter's force is 50 N. What is Mark's force?

Answer: 50 N

Question 2

Tina jumps off the boat into the water. Does the boat move?

Explain.

Question 3

What is the force of the water on a standing still boat of 345 kg.

Answer: 3450 N

Question 4

A diver climbed onto the boat from the previous examples. He brought with him a wreckage he found which weighed 14 kg. Which information is missing to tell the exact magnitude of the acting and reacting

force?

End of the activity

EXIT