**ACTIVITY: Startling statements**

**Activity idea**

In this activity, students record and average responses to questions about muscles.

By the end of this activity, students should be able to:

* discuss some basic and interesting facts about muscles
* use mathematical skills to find an average.

[Introduction/background notes](#Introduction)

[What you need](#need)

[What to do](#Do)

[Extension idea](#extension)

[Question cards](#question)

[Answers to startling statements](#answers)

**Introduction/background**

This activity is a whimsical way to introduce or conclude a teaching unit on the muscles.

**What you need**

* Cut up [question cards](#question)
* Safety pins or masking tape
* Paper and pens for recording

**What to do**

1. Each student has a question pinned or taped to his/her back. Students move about the room recording the responses to the question from other classmates.
2. After collecting 10 responses, the students average their responses.
3. The teacher then leads a session of sharing questions, students’ average responses and the correct and ‘startling’ [answer](#answers) to each of the questions.

**Extension idea**

* Instead of using this as a whole class game, hand out the sheet containing the question cards and ask students to complete a web quest.

**Question cards**

|  |  |
| --- | --- |
| About how many times a day do you blink? | What percentage of the average person’s body weight is muscle? |
| How many muscles are there in the human body? | How long is the longest human tongue?  |
| What is the greatest total weight lifted in consecutive bench presses in 1 hour? | What percentage of living things does not have a backbone? |
| How many moveable (including semi-moveable) joints are there in the human body? | How many times do you need to frown to make a permanent brow wrinkle? |
| How much stronger is a chimp than a human? | How many more bones do babies have compared to adults?  |
| How many bones in a giraffe’s neck? | The rhino beetle is the strongest animal. How many times its own weight can it lift? |
| How much would a 65 kg student have to lift to be as strong as a rhino beetle? | What is the biting force of the masseter muscle on the side of your mouth? |
| How many times does the heart beat each day? | What is the downwards force exerted by the uterus during child birth?  |
| How many muscles are there in the tongue? | What is the optimum efficiency of human muscle? |
| How many times does an average person’s heart beat in the first 50 years of their life? | What percentage of an elite female athlete’s body is fat? |
| What percentage of an elite male athlete’s body is fat? | What is the length of the smallest muscle in your body? |

**Answers**

Q: About how many times a day do you blink?

A: 15 360 (at 16 blinks per minute for a 16 hour day).

Q: What percentage of the average person’s body weight is muscle?

A: 40%.

Q: How many muscles are there in the body?

A: 630

Q. How long is the longest human tongue?

A. 9.8cm (Stephen Taylor, Milan, 5 January 2006).

Q. What is the total weight lifted in consecutive bench presses during 1 hour?

A. 138 482 kg. Eamon Keane, 22 July 2003. He lifted 200 pounds (90 kg) with 1280 repetitions, then 100 pounds (45 kg) with 493 reps.

Q. What percentage of living things do not have a backbone?

A. 97%.

Q. How many moveable (including semi-moveable) joints are there in the human body?

A. 230.

Q. How many times do you need to frown to make a permanent brow wrinkle?

A. 200 000.

Q. How much stronger is a chimp than a human?

A. Up to 5 times, but different reports say anything from 2.5 to 6 times stronger.

Q. How many more bones do babies have compared to adults?

A. 94 more bones in babies – they fuse later.

Q. How many bones in a giraffe’s neck?

A. Seven – the same as humans.

Q. The rhino beetle is the strongest animal. How many times its own weight can it lift?

A. 850 times its own weight.

Q. How much would a 65 kg student have to lift to be as strong as a rhino beetle?

A. 552 250 kg.

Q. What is the biting force of the masseter muscle on the side of your mouth?

A. 4337 N.

Q. How many times does the heart beat each day?

A. Approximately 100 000.

Q. What is the downwards force exerted by the uterus during child birth?

A. From 100–400 N.

Q. How many muscles are there in the tongue?

A. 16.

Q. What is the optimum efficiency of human muscle?

A. Between 14–27%.

Q. How many times does an average person’s heart beat in the first 50 years of their life?

A. Approximately 2 billion.

Q. What percentage of an elite female athlete’s body is fat?

A. Up to 20% (12–20%).

Q. What percentage of an elite male athlete’s body is fat?

A. Between 6–12%.

Q. What is the length of the smallest muscle in your body?

A. 0.1 mm. The stapedius muscle in your ear.