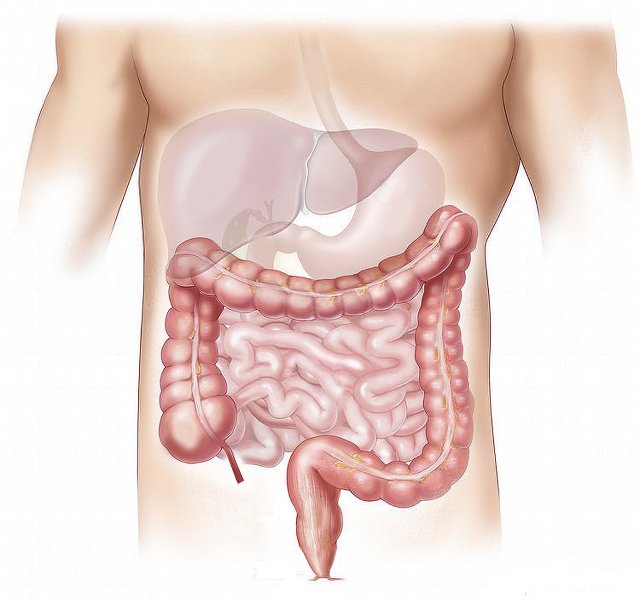
**Moving through the digestive system**



Food we swallow moves through the digestive system.

What is the main thing that causes food to move through the digestive system?

|  |  |
| --- | --- |
| **A** | Gravity |
| **B** | Contraction of muscles in the digestive system |
| **C** | Vibrations from body movements such as walking |
| **D** | Swallowing more food pushes it along |

*Biology> Big idea BCL: The cellular basis of life > Topic BCL2: From cells to organ systems > Key concept BCL2.3: The human skeleton and muscles*

|  |
| --- |
| **Diagnostic question** |
| **Moving through the digestive system** |

**Overview**

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| --- | --- |
| Learning focus: | Bones and muscles are tissues that work together with organs in organ systems to support the life processes of cells to keep organisms alive. |
| Observable learning outcome: | Explain the presence and roles of muscles in organs and organ systems. |
| Question type: | Simple multiple choice |
| Key words: | digestive system, muscle |

**What does the research say?**

When children up to age 15 were asked to draw what is inside the human body, most drew organs but very few drew muscles, and when muscles were drawn they were commonly only depicted in the limbs (Reiss et al., 2002; Bartoszeck, Machado and Amann-Gainotti, 2011). Driver’s review of the research literature suggested that there was no evidence that school-age children recognise the involvement of muscles in the digestive, circulatory and respiratory systems (Driver et al., 1994).

Several studies have found that children from ages 4 to 10 do not appreciate that food is pushed through the digestive tract by waves of muscle contraction (peristalsis), believing instead that gravity and body movements such as walking and bending are responsible (Teixeira, 2000; AHİ, 2017).

**Ways to use this question**

Students should complete the question individually. This could be a pencil and paper exercise, or you could use the PowerPoint presentation with an electronic voting system or mini white boards.

*Differentiation*

You may choose to read the question to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

B – Contraction of muscles in the digestive system

The best answer is that contraction of muscles in the digestive system (peristalsis) is the main thing that moves food through the digestive system. However, students may want to pick more than one answer – they may rightly think that gravity and other body movements will make some contribution to moving food through parts of the digestive system – and it is useful to know if this is part of students’ thinking.

**How to respond - what next?**

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs. Responses often work best when the activities involve paired or small group discussions, which encourage social construction of new ideas (meaning making) through dialogue.

The question can be used as the basis for a discussion with students; for example: what do they think are the relative contributions of these factors in moving food through the digestive system? If they think gravity is the most important factor, what about when food gets to the start of the large intestine and has to move upwards? What would their answer be if the question was asked about a person who was lying down, or was motionless because they are asleep, or was an astronaut in space?

If students have misunderstandings about the presence and functions of muscles in organ systems such as the digestive system, the following BEST ‘response activity’ could be used in follow-up to this diagnostic question to develop understanding:

* Response activity: Muscles in organ systems

**Acknowledgments**

Developed by Alistair Moore (UYSEG).

Images: pixabay.com/Elionas2 (1463369)

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