

THE CENTRE FOR TRAUMA SCIENCES

TALKING POINTS

COMPREHENSION

1. Why is trauma considered a disease?
2. Why is it challenging to perform research into trauma?

APPLICATION

5. How might “new treatments to help blood clotting” help victims of trauma?
6. What practical measures do you think the C4TS might be taking to reduce incidences of injuries?
7. Collaboration is important for any scientific research. Why do you think that collaboration might be especially important for trauma science?

ANALYSIS

8. Medical practitioners may simultaneously have both clinical and academic roles. What are the differences between these roles?
9. What useful roles do you think the immune system might play when the body responds to trauma? What might happen if immune systems “go awry” like Karim mentions?

10. What are some of the issues to consider when using animals for preclinical research?

SYNTHESIS

11. What ethical considerations do you think researchers have to bear in mind when recruiting trauma patients for clinical trials?

EVALUATION

12. Artificial Intelligence (AI) is having an increasing role in medicine, such as through identifying certain cancer cells. To what extent do you think AI could have a role in trauma treatment? What obstacles may need to be overcome?
11. The C4TS principally focuses on addressing short-term effects of physical trauma, but there are also long-term physical and psychological effects to consider for trauma survivors. What sorts of research questions could you ask to address these?

ACTIVITY 1

MAINTAINING PHYSIOLOGICAL HOMEOSTASIS

Homeostasis means the maintenance of steady internal conditions in the body, which is necessary for the systems within the body to function effectively. The circulatory system, which delivers oxygen to tissues via the blood, is an important part of homeostasis. This relies upon maintaining certain parameters, namely:

- Heart rate
- Respiratory rate
- Blood pressure.

Exercise and traumatic injury can change these parameters. The body reacts to try and stabilise them again. This activity investigates how these parameters change and how they can return to normal.

Part A

You will need:

- Stopwatch
- Blood pressure monitor
- Thermometer

1. First, while you are sitting down, measure and record your:

- temperature (using the thermometer placed under your tongue)
- heart rate (using the stopwatch and a hand over your chest to count beats per minute)
- respiratory rate (using the stopwatch to count inhalations per minute)
- blood pressure (using the blood pressure monitor)

2. Write down your predictions for how these measurements will change following exercise.

3. Do star jumps for one minute, then re-measure the parameters above. This may take several sessions, given you are unlikely to be able to measure all four at once. Ensure you only take measurements immediately after a star jump session.

4. Compare your recordings to the originals. How have they changed? Why has your body responded in those ways?

5. Once you feel at rest again, re-measure the parameters a third time. What do you notice?

Part B

Traumatic injury that leads to blood loss will lead to a drop in blood pressure throughout the circulatory system. Consider the following:

- How do you think blood rate and respiratory rate would change when the body reacts to this pressure drop?
- In what way are these reactions useful for recovering from traumatic injury?
- How do you think temperature would change?
- How do you think medical personnel can address these changes?
- Why do you think first responders will often put pressure on a wound?
- What are some advantages and disadvantages of blood transfusions?



MORE RESOURCES

- The Royal London Hospital hosts TRAUMAtalks, which cover a wide array of trauma-related topics. You can find past talks here: www.c4ts.qmul.ac.uk/education-outreach/trauma-talks

- Karim founded the After Trauma website, which focuses on providing ongoing support and community for traumatic injury survivors. For more information on how to support those who have survived incidents of trauma, please visit www.aftertrauma.org

- This video from ICU Advantage gives an introduction to a particularly complex type of trauma, traumatic brain injury: www.youtube.com/watch?v=i7GidKRUzrY

ACTIVITY 2

USING RESEARCH TO MAKE A DIFFERENCE

Effective medical research is not just about performing experiments and making discoveries, but also about ensuring that these findings contribute to practices in the real world. Create one of the following, using the internet for research:

- A one-page report aiming to convince stakeholders to fund training for first responders, based on new findings regarding how to

resuscitate patients. This brief should give the key facts in a concise form, make clear recommendations, direct users to further reading and use straightforward language throughout.

- A brochure to help medical practitioners advise patients recovering from trauma on next steps. This should include easily digestible information on physical rehabilitation, psychological support and available resources that practitioners can use or can direct patients towards.

- A one-page policy brief aiming to convince local councillors to support efforts to make healthcare services, especially trauma-related emergency responses, more equitable across their region. This should use compelling arguments, make clear recommendations and use non-scientific language.