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Physical therapy and stroke rehabilitation

with Dr Sue Peters

Talking *points*

Knowledge
1. What is a stroke?
2. What is therapeutic exercise?

Comprehension
3. How does exercise affect the brain?
4. Why can the effects of a stroke vary so widely?

Application
5. How do you think the team assesses which modalities and intensities of exercise are most suitable for each patient?

Analysis
6. Physical therapy can also help improve quality of life for people with mental health conditions. What biological mechanisms do you think might underpin this link?
7. The benefits of physical therapy can be greatly increased if a rehabilitation programme is tailored to the needs of each patient; however, this is not always possible. What barriers might prevent this personalisation and how could they be overcome?

Synthesis
8. How would you design a study that examines the effects of exercise on neuroplasticity?

Evaluation
9. In the article, Sue lists four areas of stroke rehabilitation that are advancing rapidly. Which of these areas do you think have the most promise for the future – and which could potentially be used in combination? Justify your answer.
10. The World Health Organization says that, since 2005, the chances of having a stroke have increased 50% worldwide[1]. What factors do you think might be driving this trend? What action do you think should be taken to counter it?

[1]www.uclahealth.org/news/article/risk-stroke-up-worldwide-what-can-be-done-about-it

Activity

Research the range of effects of strokes. Find out how damage to different areas of the brain affect different functions of the body.

Next, invent a hypothetical stroke survivor that has suffered damage that affects an aspect of their mobility. Include details about:
- The specific impacts of the stroke on the person's mobility.
- The person's medical history.
- Demographic information, such as age and sex.
- Details of the person's lifestyle, such as fitness level, diet and profession.

Once you have written out these details, find a classmate to partner up with. Swap your stroke survivor profiles. Now, read the profile you have received and build a therapeutic exercise regime designed to improve their quality of life as much as possible.

Think about the following while you are designing the regime:
- Consider modalities and intensities of exercise.
- Consider how the exercise regime could evolve over time.
- If you come across gaps in your knowledge, take some time to perform research – for example, how a particular modality affects a particular function.
- Consider how best to engage the stroke survivor to ensure their continued participation.
- Consider how best to ensure the stroke survivor's safety during the programme.

Once you have clearly written out the suggested exercise regime, swap again with your partner. Read the regime you have received. Do you agree with your classmate's proposed regime? Would you change any aspects? Take some time to discuss the two profiles and regimes between you. Suggest and receive constructive feedback and reflect on what you might change or investigate further if you were to do the exercise again.

More *resources*

- Sue leads the Neurorehabilitation Physiology Lab at Parkwood Institute, London, Ontario. Find out more about the team's research: www.suepeters.ca/research
- This article in The Guardian explores the personal journey of a psychotherapist who became a personal trainer due to the effects of exercise on his mental health. www.theguardian.com/lifeandstyle/2023/dec/31/afterwards-i-would-feel-blissful-how-exercise-convinced-a-psychotherapist-to-become-a-personal-trainer
- This short video from Sentis looks at neuroplasticity: our brain's amazing ability to change and adapt. www.youtube.com/watch?v=ELpfYCZa87g