Key Stage 5 – FYI on FAI

Notes for teachers

At a glance

Scientists at the University of Oxford are investigating the link between sporting activity in young people and the development of osteoarthritis. In very active people, bony lesions can form on the hip joint which increases their risk of developing the condition.

In this activity students interpret abstracts from research articles into what causes FAI. They present this information at a 'conference' before summarising it as a short and snappy radio news item.

Learning Outcomes

- Students can apply their knowledge about joints to suggest how FAI causes osteoarthritis
- Students can interpret a method and results from a scientific article to write a conclusion
- Students can write information in different styles for different audiences

Each student will need

- Copy of the pupil worksheet

http://www.oxfordsparks.ox.ac.uk/content/hip-hip-hooray
Possible Lesson Activities

1. Starter activity
   - Check students' understanding of the parts of a joint by showing them an unlabelled diagram of a hip or knee joint and asking them to label the parts e.g. ligaments, synovial capsule, cartilage.
   - Give each student a copy of page 1 of the pupil worksheet. Ask them to read through the information and answer the two questions in bold in the text.
   - As an optional extra, you can ask students to read the abstract from the study carried out by University of Oxford scientists and explain how it provides evidence of the link between FAI and osteoarthritis (OA). (The pdf can be downloaded from the weblink below).
   - Show the class the animation 'Hip hip hooray'. They can edit their answers using the information in the animation if they wish.
   - Go through the answers:
     Question 1: Describe what happens to the joint in OA. Explain why this causes inflexibility in the joint.
     Answer: The cartilage in the joint starts to wear away. This increases the friction between the ends of bones.
     Question 2: Suggest how FAI causes OA.
     Answer: The lesions rub against the cartilage when the joint moves. This causes the cartilage to wear away.

2. Main activity: Writing nano-presentations
   - Tell the students that the outcome of the lesson is to write a news story for Radio 1 about why some people develop FAI and what it is. Discuss that this needs to be easy to understand, short and snappy. To gather information they will be attending a 'conference' on FAI.
   - Give each student a copy of either page 2, 3 or 4 of the pupil worksheet along with one copy of the glossary on page 5 (optional). Each page contains a different abstract from a research article on FAI and its causes.
   - Students should read through the article and highlight any terms they do not understand. They can either use the internet to research these (see weblinks) or use the glossary. They then write a conclusion.
   - Students should check with you that their conclusion is correct before moving on. The conclusions for each article is:
     Article 1: The Prevalence of Radiographic Hip Abnormalities in Elite Soccer Players
     The prevalence of radiographic hip abnormalities in elite soccer athletes is considerable, particularly in young male athletes. The establishment of the prevalence of these findings represents the first step in identifying the relationship between radiographic abnormalities and injuries of the hip and groin in athletes.
     Article 2: Prevalence of Increased Alpha Angles as a Measure of Cam-Type Femoroacetabular Impingement in Youth Ice Hockey Players
     Even at young ages, ice hockey players have a greater prevalence of α angles associated with cam FAI than do skier-matched controls. Properties inherent to ice hockey likely enhance the development of a bony overgrowth on the femoral neck, leading to cam FAI.
     Article 3: Radiographic Prevalence of Femoroacetabular Impingement in Collegiate Football

http://www.oxfordsparks.ox.ac.uk/content/hip-hip-hooray
Players
Morphologic abnormalities associated with cam and pincer FAI were common in these collegiate football players. The prevalence of cam and pincer FAI was substantially higher than the previously reported prevalence in the general population.

- Students should then write a 'nano presentation' on their article. This aims to clearly explain the method, results and conclusion in less than 2 minutes.
- Ask students to form groups of three containing students who studied each of the articles. They should present their 'nano-presentation' to the others in the group. The others should listen and act as journalists; making any notes that they feel are useful for their radio news article. The 'journalists' can also ask the 'scientist' questions if they wish.

3. Plenary
- Students then work alone to write their radio news item. They should use the information from the video, the pupil worksheet and the research.
- Before they start, carry out a quick class discussion. Ask students to mention any facts they think are important to include in the news item. Examples are:
  - FAI develops in adolescence.
  - The frequency and intensity of exercise has an impact on the likelihood of the child developing FAI; the percentage of sportspeople that have FAI is higher than the general population.
  - FAI is a risk factor for OA.
  - However, it is important that children still exercise; the benefits of exercise to health outweigh the risk of FAI.
- The news items should be very short - less than a minute as well as being informative but using simple, non-technical language.
- Ask some volunteers to read out their news item.

Weblinks

http://www.oxfordsparks.ox.ac.uk/content/hip-hip-hooray Information on FAI with links to other sources

http://www.arthritisresearchuk.org/arthritis-information/conditions/osteoarthritis.aspx Information about osteoarthritis from Arthritis Research

http://medical-dictionary.thefreedictionary.com/
https://radiopaedia.org/ Two resources that students can use to research technical terms from the research articles