

## 1. Find the best safety devices in sports #innovation #matériaux #composants

After the 2019 Rugby World Cup final opposing England to South Africa, the controversy over dangerous rugby injuries is back on stage. More than ever, the fear for severe concussions on the ground is worrying the World Rugby Federation.

- 5 The world-leading mouthguard manufacturer OPRO has come up with a new device including circuit boards capable of measuring head impact and giving instant feedback. Such a device is a promising development to ensure the safety of the rugby players in the competitions to come.

The authors, 2022.

### Read

#### Step 1. What can you say about safety devices in sports?

- Which sport is mentioned in this article?
- Which major safety problem is at stake here?

#### Step 2. What are the specificities of OPRO+?

- Describe the safety device that has been developed, using the text and the image.

• Components of the device:

• Two functions of the device:

- How do accelerometers work?



### TOOLBOX

#### Nouns

- accelerometer
- circuit boards
- components
- mouthguard

→ real-time feedback

#### Verbs

- to measure
- to provide



### Speak

- Step 3. Work in teams of three to five students and choose one sport to design the most useful safety device to protect the players.





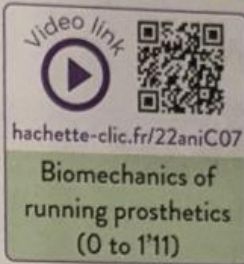
## 2. Find the most adapted prosthesis in sports

#innovation

#matériaux

Watch

**Step 1.** What can you say about prostheses in sports?



1. What's the controversy about? Circle the right answer:

- The performances of such athletes are linked to their prostheses and not their abilities.
- These athletes are taking drugs to reach higher performances.
- These athletes are cheating.
- These athletes are appreciated as distractions, not for their real talents.

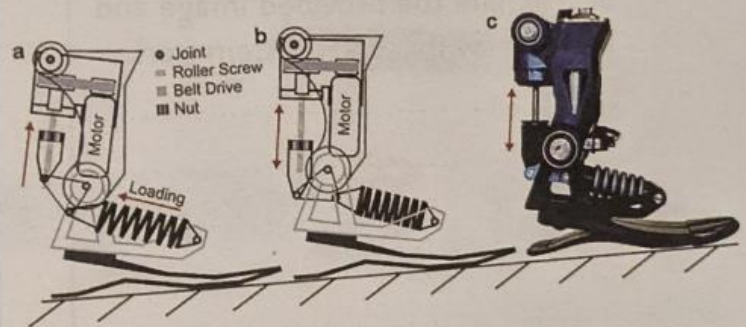
Read

**Step 2.** How do leg prostheses work?



The Walk-Run ankle (Springactive) the motor-powered prosthesis for walking and running – is shown under load (a) and without spring deflection (b, c). The prosthesis consists of four major parts: the carbon foot, the foot adaptor (light grey), the main housing (grey), and the motor gear mounting (black). [...] When the roller screw rotates, the nut will move up or down to cause a joint torque at the ankle joint.

biomedical-engineering-online, 2016.



2. Have a look at the provided image and explain in your own words how this leg prosthesis works.

### TOOLBOX

#### Nouns

- abilities
- athlete
- blade
- controversy
- performance
- prosthesis/prostheses
- race

#### Verb

- to cheat



Speak

**Step 3.** **IN PAIRS** Work and compare various sport prostheses. What are their assets and drawbacks?

