



Maths and Science Eyes in Sport

NOTE: The following is only a guide and can be adapted to suit the needs and abilities of your class.

Sport and athletes competing in sport, require a huge amount of maths and science knowledge, even without realising it. Even those of us who are spectators watching live sport or at home on the TV, are also observing maths in practice and scientific principles in action.

This simple activity outlines how you could engage your students at home or in school by looking for the maths and science in their favourite sport. By allowing students to select their favourite sport, athlete or physical activity, it enables students to see the real-world application of maths and science in sport.

- Show students a picture or video of a sporting activity
- If looking at a picture or before playing the video, ask them to think what just happened or what is going to happen next (**predict**). Can they give a **reason** for this?
- Ask children to make **observations** from the picture or video clip (only say what you see)
- Once the children have made observations, they could **record** them in pairs or as a whole class and share their findings with the class (**communicating**)
- Below are examples of some images and videos you could use to spark the conversation

Junior	Middle	Senior
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<https://spark.adobe.com/page/7zsAKcPUQhy7S/>



<https://explorify.wellcome.ac.uk/en/activities/odd-one-out/gear-up>



<https://learning.gaa.ie/hurlingskills>



<https://explorify.wellcome.ac.uk/en/activities/whats-going-on/fantastic-gymnastics>



<https://www.sportskeeda.com/hockey/fih-women-s-hockey-world-cup-2018-ireland-beat-india-1-0-to-top-the-group>



<https://www.youtube.com/watch?v=bl1rmVX7108>



Consider the following generic questions you could use to elicit, support and extend student thinking

<i>Elicit</i>	<i>Support</i>	<i>Extend</i>
<p><i>What Maths/Science can you see?</i></p> <p><i>Did anyone see anything different?</i></p> <p><i>Why did you choose that?</i></p> <p><i>Can you explain why that is important for this particular sport?</i></p> <p><i>Is there any invisible Maths/Science?</i></p>	<p><i>So the Maths/Science you see is...</i></p> <p><i>To clarify why this aspect of Maths/Science is important is because...</i></p> <p><i>Does anyone agree/disagree?</i></p> <p><i>Why?</i></p> <p><i>Is there anywhere you have seen this before?</i></p> <p><i>Can you give another example of...</i></p> <p><i>What about/Have you considered that ... in Maths/Science might be in this picture/video?</i></p> <p><i>Why/Why not?</i></p>	<p><i>Is there any invisible Maths/Science?</i></p> <p><i>What Maths/Science can you not see?</i></p> <p><i>What is the importance of this piece of Maths/Science to this particular sport?</i></p> <p><i>Can you collect as much Maths/Science information about your favourite sport?</i></p> <p><i>How will you record/catagorise your findings? (e.g. tickets & money, stadium & number, materials & shoes or friction & forces)</i></p>



Here is a more specific example of where you might see **Maths** in sport?

Hurling/Camogie:

Number

- Calculate total scores in games, over a series of games, over a season (league or championship)
- Difference between top and lowest scorer
- Attendance at games (largest v smallest)
- Consider the fraction/percentage of total scores in a game were scored in the first 10 minutes or last 10 minutes

Algebra

- Is there any pattern to the score of a game?
- Look at the pattern of numbers between defenders and attackers?
- Colour pattern in jerseys and flags
- Write number stories/sentences based on a game watched

Shape and Space

- Identify, sort and classify 2D/3D shapes (e.g. goalposts, pitch markings, stadium design)
- Identify symmetry in team jerseys
- Look at lines and angles created by players moving body parts (e.g. as they swing the hurl or the bend in an elbow)

Measures

- Identify how far out a "65" is in your locality. Can you strike the ball as far or close to that distance?
- When are most scores scored in a game? (e.g. last 10 or first 10 minutes)
- How many times can you strike a sliotar in a minute?
- Compare the area size of Croke Park to your local park or other sports pitches
- Average price to a match. Cheapest/Most expensive ticket. Match day costs vs profit/loss

Data

- The average (mean) goals and points scored per game
- Highest/lowest attendance



- Median/Mode attendance/scores throughout the season
- Compare team budgets
- Compare league tables (e.g. scores for/against, who scored most/least points/goals)



Here is a more specific example of where you might see **Science** in sport?

Athletics

Living Things

- Identify the body parts used in different events
- Can you name the muscles/bones used by this athlete?
- Which muscles/bones/organs are most important for this athlete? Why? What are their functions?
- What food would this athlete need to prepare for this event and after this event?

Energy and Forces

- What sounds can the athlete hear? (e.g. stadium, other athletes)
- What sound would spectators make at this particular event?
- Who else would need to make a sound? (e.g. race starter etc)
- How would light/heat affect their performance?
- Can you identify the force needed by the athlete to get such height/distance in their jump/stride?

Materials

- What material would be needed to make the pole vault?
- What material would be most comfortable/durable for this sprinter/marathon runner?
- Why do long distance runners wear singlets and sprinters wear body suits?
- What material helps swimmers go faster?
- Does the temperature of the water athletes drink affect their performance?

Environmental Awareness & Care

- How has technology helped improve athletic performance?
- How have athletes contributed in a positive way to our world through their performances and actions?
- What impact on city life do marathons have?