

Colour of Light Science Show Resource – Colourblind Awareness in Sport

Colour vision deficiency (CVD), which is also known as colour-blindness, affects 1 in 12 males and 1 in 200 females. CVD can affect people to varying degrees but simply, it makes it hard for individuals to perceive colours correctly. This condition can pose problems for day-to-day life including participation of sport and physical activity, as the colour choices of kits and training equipment can be challenging to distinguish.



Normal Colour Vision

Colour-Blind Simulation

With this in mind, Oxford Brookes researchers Dr Adam Bibbey, Dr John Jakeman and Daisy Lee are conducting research (funded by the EU) into Tackling Colour-Blindness in Sport (TACBIS) to explore CVD in sport and football specifically. Understanding CVD is key to inclusivity!

Do you have colour vision deficiency?

Have a go at these fun tests to find out!

<https://www.colorlitelens.com/color-blindness-test.html>

How do the tests work?

Normally humans can identify between several million different colours! This is because you have more than 6 million receptors (called cones) in your eye! These receptors sense the colour of the light reaching your eye. There are 3 different kinds of receptors called:



- L cone, (sensitive to the **red** colours: Long wavelengths)
- M cone (sensitive to the **green** colours: Medium wavelengths)
- S cone (sensitive to the **blue** colours: Short wavelengths).

CVD or colour blindness occurs when one or more of these receptors works differently compared to normal ones. This reduces the ability to tell the difference between colours. Colour blindness tests are used to tell which receptors are faulty. The most common CVD is red and/or green which is inherited genetically with the “X” chromosomes; therefore it is much more common among males than females.

How can we tackle colour blindness in sport (TACBIS)?

- Choose team kits that don't clash
- Ball and equipment (e.g. cones) colour is important
- Increase awareness of the issues so individuals with CVD feel that they can speak out
- Training coaches to provide practices that are CVD friendly
- Increase the support from coaches and governing bodies i.e. legislation

Design your own colour blindness kit and ball to help TACBIS!

Why not have a go at designing a football kit and ball that would be suitable for someone with CVD? TIP: Think about using black and white and using patterns instead of relying on colour alone! Share your designs with our researchers!



To find out more about colour blindness or the TACBIS project contact Dr Adam Bibbey (abibbey@brookes.ac.uk Senior lecturer in Sport and Exercise), Dr John Jakeman (jjakeman@brookes.ac.uk Head of Quality), Daisy Lee (Daisylee@brookes.ac.uk), visit <https://www.colourblindawareness.org/colour-blindness-and-sport/> or follow @colourblindorg @TACBISproject and @EUSport on Twitter. #TACBIS #EUSport