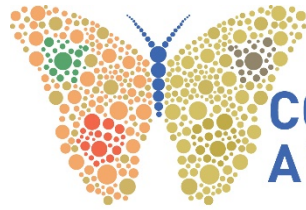




CAFE

CENTRE
FOR ACCESS
TO FOOTBALL
IN EUROPE



COLOUR BLIND
AWARENESS

www.colourblindawareness.org

Colour Blind Awareness

Best practice helpsheet

Centre for Access to Football in Europe

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Introduction to colour blindness

Colour blindness is the world's most common genetic condition, but it is also very misunderstood. Worldwide, about 320 million people have some form of colour blindness.

Colour blindness (colour vision deficiency or CVD) is usually an inherited condition affecting ability to see colours, caused by 'faulty' gene-sequencing in the DNA of the X-chromosome.

We have 3 types of cone cells in our eyes. Each type is responsible for detecting either red, green or blue light. In colour blindness the faulty sequencing means one cone type is unable to decipher light wavelengths correctly. As a result the brain receives incorrect information and can't properly interpret colour, so someone with CVD is not able to distinguish between colours normally.

Colour blindness can also be acquired as a side effect of some diseases e.g. diabetes and sickle cell anaemia.

Men are 16 times more likely to be colour blind than women, 1 in 12 European men, more than 8%, have some degree of colour blindness. This equates to around 31 million males. In a footballing context, there are enough colour blind males in Europe to fill Wembley Stadium over 344 times.



This image shows typically how many colour blind people would be present in a sold-out Wembley Stadium (white sections).

The purpose of this helpsheet is to raise awareness and understanding of colour blindness and the experiences of colour blind football fans. The helpsheet also provides advice to help ensure that colour blind people are not excluded from playing, coaching, spectating and working within football.



These images show how all-red and all-green kits can be difficult to distinguish against each other and against the colour of the pitch

Types and effects of colour blindness

There are 3 main types of genetic colour vision deficiency (CVD) conditions which can vary from mild to severe forms;

- *Protanopia / protanomaly relates to a red deficiency,*
- *Deutanopia / deuteranomaly relates to a green deficiency and*
- *Tritanopia / tritanomaly relates to a blue deficiency.*

Colour blind people can see clearly and in focus but with all types of CVD, however mild or severe, their accurate perception of many different colours is affected.

Most people believe that red / green colour blind people confuse just red and green. This is not the case – red / green colour blind people face difficulties viewing colours across the light spectrum.

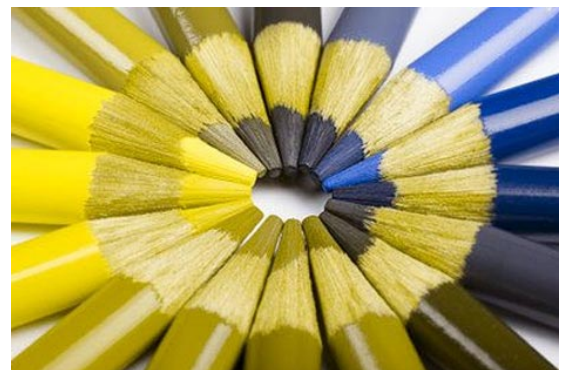
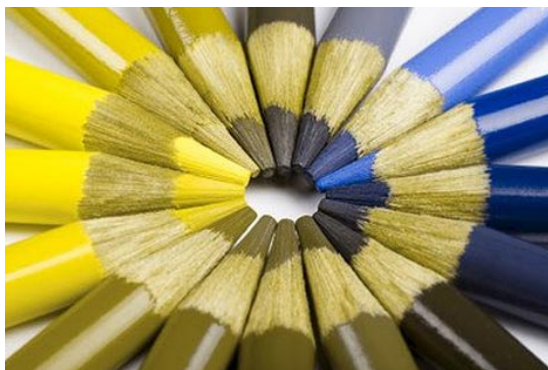
The most frequent difficulties occur with combinations of reds / greens / browns / oranges but problems with other colour combinations are commonplace. For example, although red / green colour blind people can see the colour blue, blues and purples can be mixed up because of the (missing) red element in purple.

Someone with a red vision deficiency will also find it difficult to distinguish dark colours and can easily confuse a deep red with black.

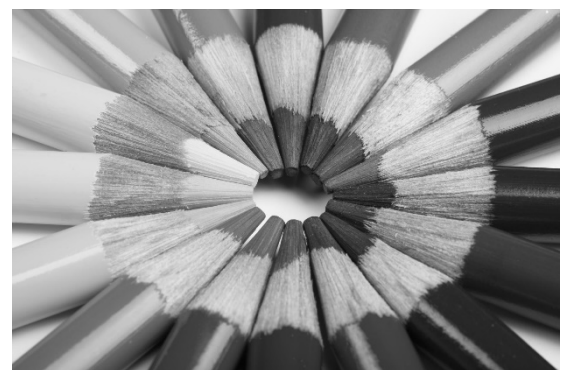
The images below show simulations of the most severe forms of colour blindness. All severities of red / green CVD are very common but blue deficiency and total colour blindness (monochromacy) are extremely rare.



Actual photograph



Protanopia (left) affects red light, and Deuteranopia (right) affects green light



Tritanopia (left) affects blue light, and Monochromacy (right) is total colour blindness. These two forms of colour blindness are extremely rare

People with red or green deficiencies will see the world in a similar way to each other because red and green are very close together on the light spectrum.

Colour blindness in football

There are a number of common issues faced by colour blind football players and fans when watching a live match.



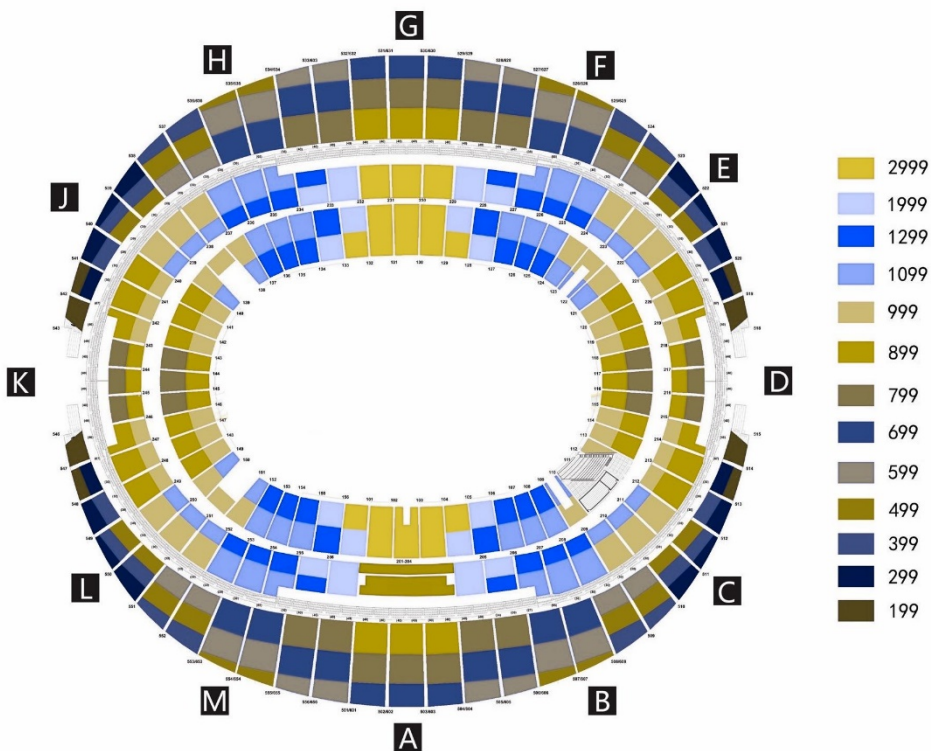
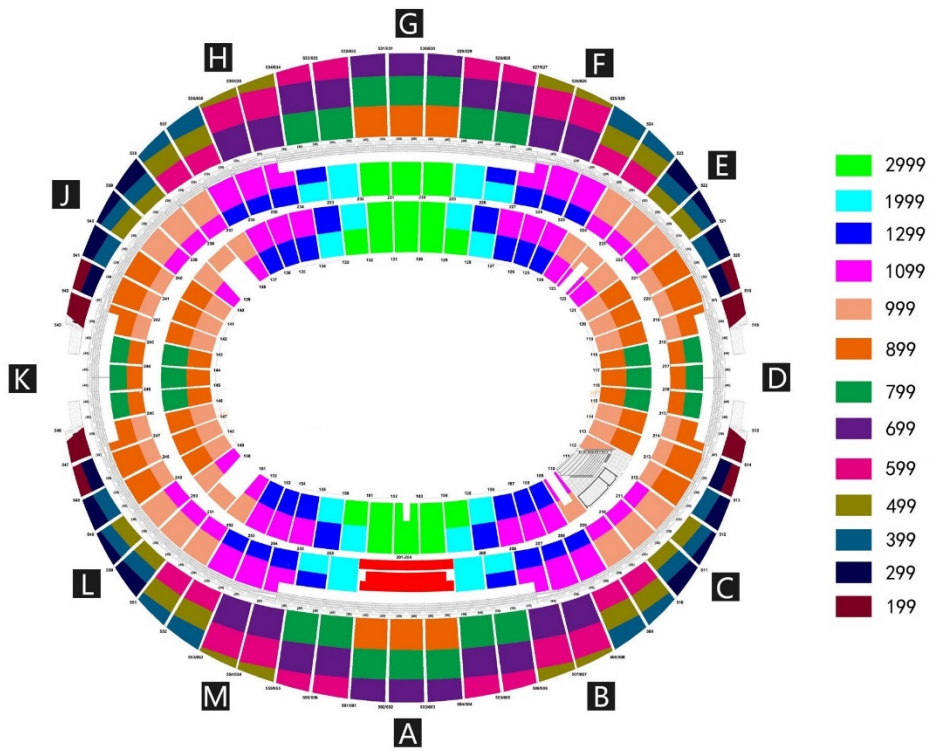
Kit clash – problematic combinations include red vs green / orange; blue vs purple / maroon, red vs black (as above), yellow vs orange, mid-green vs grey / silver, bright green vs yellow / orange and bright pink vs blue



Kit clash with pitch – for example an all-red kit can have the effect of making players ‘disappear’ against the background of the pitch



Colour of the ball – a predominantly-red ball can easily be lost by a colour blind player or spectator against the background of the pitch



Colour-coded stadium maps – for example colours such as blue and pink appear similar, orange and green are indistinguishable

Top tips for inclusion

A significant percentage of the population is colour blind

- Adopt W3C colour contrast guidelines in online publications and outputs <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast7.html>
- Use labels and symbols in addition to colour contrast for wayfinding, signage and graphics
- Avoid the use of 'traffic light' colour schemes as these may not be easily distinguishable
- When deciding on alternative kits (e.g. away shirt, third shirt), consider both patterns and colour schemes. Please note, some single colour kits (e.g. all red, all green, all orange) can 'disappear' when contrasted against the colour of the pitch
- Consider both patterns and colours when selecting a match ball
- Avoid the following colour schemes or contrasts:
 - Red / green / orange
 - Red / black
 - Orange / yellow / green
 - Blue / purple / dark pink
 - White / yellow
 - Grey / green / pink
 - White / pale blue and other pastel colours

Offer support to colour blind players, coaches, administrators, and employees and be mindful of the large numbers of spectators and viewers who are colour blind and watch football matches at your grounds or at home (on television).

About CAFE

The Centre for Access to Football in Europe (CAFE) is a European wide NGO and UEFA CSR associate partner. CAFE was established in 2009 to improve access and inclusion to football stadia across Europe using the special influence of football.

To deliver this ambition, CAFE shares best practice solutions and supports UEFA's national associations, their leagues, clubs, disabled fans and groups, equality and diversity NGOs and other key stakeholders by working together to create access and inclusion for all.

CAFE seeks to improve access and inclusion within football for disabled people across Europe to ensure they can take their rightful places as fans, guests, players, coaches, volunteers, employees and decision makers alongside their peers.

About Colour Blind Awareness

Colour Blind Awareness is a Community Interest Company (non-profit making) formed to raise awareness of the issues faced by colour-blind people in society. All profits from the company are used to provide free colour vision screening in schools and to provide educational supplies suitable for colour-blind students.

Colour Blind Awareness was founded by Kathryn Albany-Ward after she discovered that her son was colour blind and it affected his enjoyment of watching live sports and his ability to participate in sport at school.

Colour Blind Awareness presented at the International CAFE Conference 2015 in Paris, Total Football Total Access. This presentation can be viewed online at <https://www.youtube.com/watch?v=-xkL1IZEbGc>.

Colour blind people may struggle to differentiate between kits of certain block colours, and against the background of the pitch



Alternative formats of this document are available on request

Total Football Total Access Total Sense

Supported by:



Guidance and information provided by:

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