

Prevalence of colour blindness in elite sport

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Introduction

Colour-blindness or colour vision deficiency (CVD) affects approximately 1 in 12 men and 1 in 200 women, making it more difficult for those with CVD to differentiate between colours. Considering the world is now heavily reliant on colour this must pose problems for individuals with CVD in their day-to-day life, education, work and hobbies.

Method

118 male football athletes from professional clubs and National teams from the United Kingdom and Denmark initially completed an online questionnaire. Data on demographics, whether they have been screened for CVD, whether they have CVD (see table 1), if yes, the impact this had on them athletically, whether any provisions has been made to support them in their sport and the impact on their day-to-day life was collected. Participants also completed the ColourSpot app (University of Sussex) to assess whether an athlete reached a threshold to indicate colour blindness (not a clinical diagnosis), this test was often accompanied by the Ishihara test to support validity of the results.

Table 1. Sample size from across teams and number identified as colour blind.

Country	Sample Size	Number Identified as Colour Blind
UK U19 National team	17	1
UK Senior Professional Team	27	1
UK U23 Professional Team	18	2
Randers FC Youth Academy	32	1
Randers FC Senior Team	24	2
Totals	118	7

Results/Discussion

The results from five teams so far indicate that 7 football players at elite level have some form of CVD. This equates to 1.5 players in a squad of 25 players and at least one in every team screened. The publication of this information is particularly relevant prior to the start of the 2022 FIFA World Cup where, extrapolating these results, it can be reasonably expected there will be approximately 50 colour blind players amongst 32 squads of 26 players. One of these is already well known – Thomas Delaney from the Danish National team.

Players outlined challenges such as kit and equipment clashes:

UK senior international football player:

“Confusion with similar colour bibs during training”

UK U23 professional football player:

“Can’t tell between green and yellow and blue and purple sometimes”

Our results equate to 6% CVD prevalence (1 in 17) which is below the national average of 8% (1 in 12 individuals). Thus, approximately 25% of colour blind players are not making it to elite level, which is a problem for football as it represents wasted time and financial investment and negative mental health outcomes. Additionally, if children and individuals have a negative experience of sport due to limited colour vision deficiency awareness and support, this may lead to sport drop out. This is detrimental from a psychological (e.g. feelings of incompetence), biological (e.g. reduce energy expenditure and bone density) and social (e.g. not participating with their friendship groups) perspective.

For players with CVD, they often outline negative mental health outcomes because they do not feel as though they can speak out about their challenges for fear of embarrassment or detrimental impact on contract extensions/negotiations. Players being released from academies/clubs, potentially due to limited CVD support, also face huge transition and associated mental health challenges. Additionally, clubs should have a duty of care to create and follow inclusivity policies to ensure that individuals with CVD are supported. For instance, coaches being educated in how to avoid the wrong combinations of kits and bibs or incorrect use of equipment i.e. red and orange cones or confusing sets of bib combinations. Additionally, the present research identified that there needs to be more adjustments to kit regulations across leagues/competitions, which would benefit both individual players and teams performance.