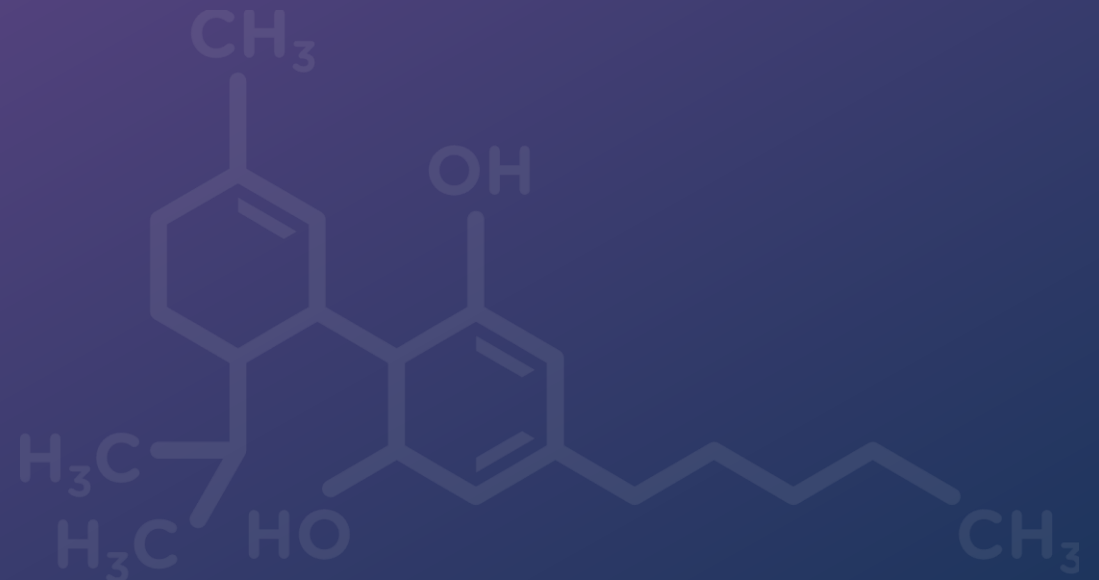


CBD use in sport



Professor Graeme Close

Biography



I am a former professional Rugby League player, holding Bsc. Hons degree in Sports science following on to complete my PhD. I am currently a professor of Human Physiology at Liverpool John Moores University and am deputy chair of SENr (Sports and exercise nutrition register) and a fellow of both ECSS (European College of Sport Science) and BASES (British Association of Sport and Exercise). Through my work I combine my academic research with nutrition and physiology consultancy to some of the worlds leading sporting organizations.

My most recent research looks into cannabidiol (CBD) and skeletal muscle. I have published over 150 original papers and review articles and regularly deliver seminars; translating lessons from the sporting world across the globe. Over the past 5 years I have appeared on several TV and Radio Shows including BBC Breakfast News, BBC- Trust Me I'm a Doctor, ITV -The Truth About Food, and Radio 2 and 4.

I am currently the head of performance nutrition to England Rugby and the Head of Performance Nutrition to The European Tour Golf.

CBD use in Sport

THE WHO AND THE WHY

- The use of CBD in sport is ever increasing; many athletes are turning towards the supplement to aid in recovery and pain management
- CBD has been reported to possess anxiolytic, anti-inflammatory, anti-oxidant and analgesic properties
- As of 2017 CBD was removed from WADA's list of prohibited substances however **all other cannabinoids remain prohibited.**
 - Competitive athletes would not commit an anti-doping violation if only CBD was found in their system
 - An athlete may risk an anti-doping violation if taking a product that contained levels of any other cannabinoid
- In 2020 myself and my colleagues at Liverpool John Moores University published a paper looking at it's use in the UK Rugby union, we analysed data from 517 players and found 91% were aware of CBD and of those 26% have tried it
- Overall we found the following reasons cited for use:
 - Improvement in recovery
 - Aid in sleep
 - For anxiety
- We found also that use increased with age profile with those above 28 years or older reporting the highest percentage of use. It could be speculated that it is the older players who have residual pain through a longer playing history

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POTENTIAL BENEFITS

Pain Management

- For many athletes, the prevalence of pain can become an everyday nightmare, due to exercise induced muscle soreness or impact/ injury induced damage, this can have a negative impact both physically and psychologically
- Pre-clinical evidence suggests CBD can be beneficial for reducing impact of both neuropathic and inflammatory pain

Reducing anxiety

- Anxiety can be prevalent in competitive sports
- CBD has been reported to possess anxiolytic effects which could be useful as an aid to calm any pre-competition nerves
- Studies have shown that CBD interacts with our serotonin receptors
- This interaction may also be useful to aid with focus

Recovery aid

- When partaking in any competitive sport, or training recovery is hugely important; recovery allows the body to heal and reach peak performance levels
- Restorative sleep is vital to ensure adequate recovery
- Pre-clinical evidence suggests CBD can improve sleep quality
- CBD's impact on sleep may be due to its anxiolytic effects.

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LEGITIMATE CONCERN

Anti-doping violation

- Only CBD is not prohibited by WADA all other cannabinoids are still prohibited
- Understandable that those interested in using CBD may still be concerned about failing a drug test due to unwanted cannabinoids in their system
- The Tokyo 2020 Olympics saw Olympic sprinter Sha'Carri Richardson's hopes dashed on suspension from the games due to testing positive for cannabis use
- Looking again at our 2020 study, of those athletes who stated they did not take CBD:
 - 64% stated they were concerned about committing an anti-doping violation

Misinformed

- What is also a concern is the potential level of misinformation athletes have regarding CBD potentially leading to an inadvertent anti-doping violation; again our 2020 study shed some interesting light on this subject
- When we looked at where athletes obtained education on CBD's benefits and use, the results suggest that they did not rely on their teams nutritionist advice:
 - 73% of those taking CBD were education through the internet about it's benefits
 - 61% were educated by a teammate
- We also questioned whether or not those taking CBD believed the product they were taking was batch tested and alarmingly:21% did not believe their product was!
- What was more concerning however was that of the 79% that believed the product was batch tested, of the 13 products reported only 1 was tested!

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NOT ALL CBD PRODUCTS ARE CREATED EQUALLY

- It is important when taking a CBD supplement that the consumer is aware of what they are consuming!
- Some product found on the market can contain unwanted contaminants along with levels of THC and some may contain lower levels of CBD than claimed- all unknown to the average consumer
- According to a paper published April 2020 titled: An Analysis of Over-the-Counter Cannabidiol Products in the United Kingdom¹ 29 CBD food supplements available on the UK market were tested, the results were concerning:
 - 34% of products had 50% less of the CBD content advertised
 - 1 product had no CBD content
 - 55% of products had measurable levels of THC, above limit
 - CBN (which is another cannabinoid that is classed as a controlled substance therefore illegal) was present in products
 - One product had levels of ethanol (i.e. alcohol content)
 - Lead and arsenic were also detected
 - All products had other cannabinoids present such as CBDA/CBDV and CBVA. At present these cannabinoids do not fall scope of a CBD claiming food supplement. As these other cannabinoids that are active in some cases, they can exacerbate the effects of CBD itself, they have effects in their own right.

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MY VIEW ON CBD AND RECOMMENDATIONS

- Taking the above information into account, it is clear to see that there is a need for pure safe CBD food supplements as well as provision of education, along with much more sport specific research into the benefits and risks associated with its use.
- When sourcing a food supplement it is imperative that you source one that has ready available Certificates of Analysis (COA's) showing clearly what cannabinoids it contains and at what percentage.
- For athletes it is best to go one step further and ensure the brand has had their products tested by LGC group (the testing body that test for Informed Sport). Currently at this time informed sport does not certify any CBD product.
- However my overarching point is for athletes **Check with your own sporting governing body** prior to taking any CBD supplement

References

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CBD MARKET CONCERNS

- Having become aware of the existing sub-par CBD market, Chanelle McCoy Health conducted their own market study in 2021
- 3 off the shelf popular brands were tested by an independent accredited laboratory, summarized below is what was found
- What is notable is that One of the products tested contained **significantly lower than advertised levels of CBD** (88% less than the advertised content of CBD) and **one product also contained levels of THC.:**

Compound detected	Brand A (600mg in 30ml)	Brand B (500mg in 30ml)	Brand C (260mg in 10 ml)
Arsenic	0.004 mg/Kg	0.005 mg/kg	0.003 mg/Kg
Ethylbenzene	0.011 mg/kg	0.014 mg/kg	0.028 mg/kg
Styrene	0.011 mg/kg	-	0.20 mg/kg
Toulene	0.055 mg/kg	0.020 mg/kg	0.092 mg/kg
Pyrimethanil	-	0.73 mg/Kg	-
Ethyl- Chlorpyrifos	-	0.033 mg/kg	-
Benzene	-	0.017 mg/kg	-
Cannabinoids detected	Brand A (600mg in 30ml)	Brand B (500mg in 30ml)	Brand C (260mg in 10 ml)
CBD content	2.2565%	0.1928%	2.7347%
CBDA content	0.0082%	-	0.5020%
Total CBD (CBD+(CBDA X0.877))	2.2637%	0.1928%	2.7787%
Expected % CBD content	2%	1.60%	2.60%
CBDV (Cannabivarin)	0.0134%	-	0.1160%
CBC (Cannabichromene)	-	-	0.0059%
CBG (Cannabigerol)	-	0.0784%	-
THC (delta 9- Tetrahydrocannabinol)	-	-	0.0038%

Arsenic: FSA Ireland recommended safe intake of total arsenic stands at 1mg/Kg Ethylbenzene: TDI as set by WHO currently stands at 97.1g/kg b.w. Styrene TDI as set by WHO currently stands at 7.7g/kg b.w. Benzene: No TDI known carcinogen

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LET'S EDUCATE OURSELVES ON WHAT WAS FOUND

Arsenic

- Highly toxic and a **confirmed carcinogen** (cancer causing agent)
- Associated with cardiovascular disease and diabetes.
- Exposure of Arsenic in early childhood has been linked to negative impacts on cognitive development.³

Benzene

- **Known carcinogen** which at high levels of exposure can cause our cells not to function properly.
- The link between Benzene and cancer is largely focused on leukaemia and blood cancers.⁴
- Benzene is found in gasoline and exhaust fumes and is used as a starting material in making plastics.

Toluene

- Commonly found in crude oil and is produced in the process of making gasoline and other fuels from crude oil
- Toluene may affect the nervous system⁵
- Low to moderate levels can cause tiredness, confusion, weakness, memory loss, nausea and loss of appetite.

Pyrimethanil

- **Fungicide** used to control grey mould on crops

Ethyl-Chlorpyrifos

- **Insecticide** which is currently not approved for use in the EU.⁶
- Associated with cardiovascular disease and diabetes.
- Where identified levels were 30% higher than the current maximum residue levels by the European Food Safety Authority.⁷

Styrene

- Found in tobacco smoke and is used widely to make plastics and rubber.
- It can be present in the air near industrial facilities or hazardous waste sites
- The national toxicology program in the US has listed Styrene as a reasonably **anticipated carcinogen** in 2011⁸

Ethylbenzene:

- Commonly found in gasoline, pesticides and plastics
- Acute (short-term) exposure to ethylbenzene can result in throat irritation, chest constriction, eye irritation of the eyes and dizziness⁹

Thank You



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