

Snus Use in English Professional Football

Report prepared for the English
Professional Footballers' Association

Loughborough University

Dr Daniel Read, Dr Ed Cope & Dr Lee Taylor

Contents

Executive summary	3
Background	4
Research Summary - Health Issues	5
Research Summary - Performance	6
Research Aim	7
Research Questions	7
Research Objectives	7
Research Design	8
Key Point 1: Prevalence	10
Key Point 2: Players Use Snus to Relax	11
Key Point 3: Socially driven use	12
Key Point 4: Sources	13
Key Point 5: Performance Impacts	14
Key Point 6: Dependence	15
Key Point 7: Health Impacts	16
Key Point 8: Difficulty Quitting	17
Key Point 9: Protective Factors	18
Supporting Players and Staff	19
Limitations and Future Research	21
Summary	22
References	23
Appendices	24

Executive Summary

Anecdotal evidence from players and staff suggests that snus (a smokeless tobacco pouch placed between the lip and gum) is commonly used among professional footballers in England. Snus use has been associated with a variety of health conditions in the general population, but at present, there is no available evidence about how and why professional football players use snus to inform wellbeing plans. The aim of this research was to explore snus use in men's and women's professional English football to better understand prevalence, motivations, sources, and perceived health and performance effects.

The research adopted a two-stage approach involving a consultation with 16 performance and medicine staff across the football league and a survey with professional male and female football players in England. In total, 628 and 51 eligible participants were recruited from the men's English Football League and Women's Super League respectively.

Overall, 18% of male players, and 22% of female players use snus currently, and 42% and 39% respectively have used snus at least once in the past. Importantly, although players often used the term snus, most players used legally available tobacco-free nicotine pouches. Players typically reported using both snus and nicotine pouches socially to relax and spend time with teammates. Most players did not report any performance benefit to use, but those who did perceived an improvement in mental readiness.

Most players reported at least one indicator of nicotine dependence (e.g., use without awareness or intention). Short term withdrawal symptoms were also common including cravings, irritableness, restlessness, and anxiety. Critically, although players reported intending to quit, difficulty stopping was linked to the addictiveness of nicotine, the prevalence of use in football, the availability of pouches, and concern over seeking support.

Support for players looking to stop or reduce their use should include relevant educational materials, nicotine weaning guidance, external support options separate from club channels, and complementary stress management techniques. Additionally, avoiding bans on snus, normalising help-seeking behaviour, and providing career aftercare can all contribute to supporting player wellbeing.

Background

Snus refers to oral, smokeless tobacco pouches that resemble a small teabag and contain nicotine that produces a calming effect when taken in higher doses. Snus is not legally available for purchase in the UK.

Snus use among players is a well-documented but poorly understood practice in English professional football raising concern about the performance and health implications.

The English nicotine market has recently shifted with the emergence of nicotine pouches which are similar in appearance to snus and also placed under the lip, but do not contain tobacco and are legally available for purchase in shops.

Research Brief

The decision to investigate snus use in English football was motivated by multiple factors:

1. Anecdotal reports as well as increased interest in snus use among PFA members and wider stakeholders in English football post-Covid.
2. The lack of evidence on use and effects specific to professional football population.
3. The need for an accurate estimate of snus use in the men's and women's game.
4. The need for evidence to underpin the PFA's educational and strategic support for clubs and players.

This report is intended to provide an overview of current patterns of use in English football including player and staff views to support player wellbeing and inform future research.

Research Summary – Health Issues

Nicotine Dependence

Nicotine is a highly addictive substance that when absorbed into the bloodstream causes the release of neurotransmitters in the brain, including dopamine, that leads to a pleasurable feeling as well as reduced stress¹. Over time, continued use of products that contain nicotine can lead to tolerance and dependence. Consequently, short-term abstinence from nicotine can lead to withdrawal symptoms such as cravings, anxiety, and restlessness². Nicotine use is also associated with mental health issues although the direction of causation may vary³.

Cancer

A systematic review of available evidence suggests that snus use is associated with an increased risk of oesophagus and pancreatic cancer in comparison to non-smokers⁴. There is weaker evidence to suggest that snus use is also associated with an increased risk of stomach and rectal cancer in comparison to non-smokers.

Cardiovascular Health

Cohort studies indicate that snus use is associated with an increased risk of cardiovascular disease and mortality rates in comparison to people who have never used tobacco^{5,6}.

Oral Health

There is strong evidence supporting the association between snus use and oral mucosal lesions⁷.

Nicotine Pouches

Given the relatively short-period of time tobacco-free nicotine pouches have been available, there is a lack of long-term evidence concerning the health impact of these products. It is worth noting that nicotine pouches may provide a less risky toxicant profile compared to smoking or snus, but further analysis and evidence is required⁸.

Research Summary – Performance

Overall, evidence concerning the impact of nicotine on athletic and sporting performance is limited and provides mixed findings^{9,10}. Primarily, there is a lack of evidence from relevant elite sport samples comparable to the demands of professional football.

Musculoskeletal Performance

Cardiovascular and strength enhancements are unlikely from nicotine use⁹.

Cognitive Enhancement

Nicotine can enhance some abilities in cognitive tests involving fine motor skills, attention, and memory¹¹ but evidence is required addressing elite football performance and decision-making.

Sleep

It is well documented that nicotine can impair sleep quality¹² which may be detrimental to recovery.

Appetite Regulation

Scientific evidence demonstrates that nicotine can alter appetite (e.g., feelings of satiety)¹³ however such effects could undermine fuelling for performance and recovery.

Research Aim

1. To explore snus use in men's and women's professional English football.

Research Questions

1. How prevalent is snus use in English football?
2. Why do players use snus in English football?
3. Where do players source snus?
4. What are the perceived health and performance effects of snus?

Research Objectives

1. Provide a reliable estimate of snus use in English football.
2. Develop strategies to educate players and aid cessation.
3. Identify areas for future research.

Research Design

The research followed a two-stage approach involving a consultation with performance and medicine staff across the football league and a survey with professional male and female football players in England. The combination of interviews and survey data provides a complementary methodology that can assess a wider sample with additional detailed insight from interviews.

Staff Interviews

Participants were recruited through direct contact via email or LinkedIn. In total, 87 invites were sent and 16 responded. Interviews were undertaken with 16 performance and medical staff (see appendix for list of roles) currently working in men's and academy football in England. It is noted that a number of individuals contacted were very interested in the research but not comfortable talking about the snus use in their respective club.

Interview questions addressed perceived prevalence and behaviours, performance and health impacts, and support required. Interviews were conducted via recorded audio or videocall, then transcribed for analysis.

Player Survey

An online questionnaire was completed by professional male and female football players in England. The survey was designed to answer:

- Awareness and level of education.
- Prevalence, frequency, timing, and type of use.
- Motivations for use/non-use and perceived effects of use and withdrawal.
- Likelihood to quit.
- Demographic information.

Based on responses, the survey split participants into current users, previous users, and never users to filter questions accordingly.

The survey was shared with players via a QR code at PFA workshops to protect anonymity. Participation was voluntary and informed consent was required for participation. Participants who did not provide consent were removed from any further analysis.

Before analysis responses were removed due to not providing active consent to the research requirements, participants with more than 50% missing data, or completing the survey in an impossible timeframe (i.e., completing the survey without consideration of response).

Please note, the data set cannot be shared publicly due to the potential for retrospective identification which would undermine anonymity promised to participants.

Men's Football Sample

The men's football sample was comprised of 628 eligible participants from the Premier League (31%), Championship (22%), League 1 (25%), and League Two (17%), and not disclosed (4%). The average age was 21 and the demographics were as follows: White 59%; Mixed Race 16%; Asian or Asian British 1%; Black or Black British 18%; Other Ethnic Group 3%; not disclosed 3%.

Women's Football Sample

The women's football sample was comprised of 51 participants from Women's Super League clubs. The average age was 26 and the demographics were as follows: White 73%; Mixed Race 14%; Asian or Asian British 4%; Black or Black British 0%; Other Ethnic Group 2%; not disclosed 8%.

Results

The findings of the research are presented as key points and are based on analysis of the survey findings alongside insight from thematic analysis of staff interviews. A full breakdown of the percentage responses for each survey question can be found in the appendices at the end of the report.

Key Point 1: Prevalence

In both the men's and women's game:

- **1 in 5 players** currently use snus.
- **2 in 5 players** had used snus at some point, even if only once.

Among player comments and staff consulted, estimates of use varied from a handful of senior players to most of the contracted playing squad:

"It's extremely common in football and really addictive. My guess is more than 60% of players use it." (player)

"So there was somebody using it the first team of [Premiership club], the B team of [Premiership club], and the first team of [League Two club]. So I've seen it being used at all those different teams." (staff)

"I think it's very common in our squad. I'd probably say 65% to 70% use it, and that's including, worrying for me, is actually some of the youth players taking it as well." (staff)

"We had probably close to 50%, I'd say of players that I just observed taking it last year and that is a bit less now with a few people leaving. That is, we've got six people that are currently using it." (staff)

"I think only 50% in our first team squad and we carry a squad roughly 20 to 22... and let's say yeah most of them will be on it daily" (staff)

Most players used legal tobacco-free nicotine pouches rather than tobacco-based snus, however, it was clear from the interviews that players often used the term snus to refer to nicotine pouches:

"a lot of what I see isn't actually snus, it's the nicotine pouches they are using. Whereas when it first happened, you could only get it [snus] if you got it sent in" (staff)

Estimates of current use are likely higher than reported due to players not wanting to disclose use and players reporting sporadic, recreational use.

Key Point 2: Players Use Snus to Relax

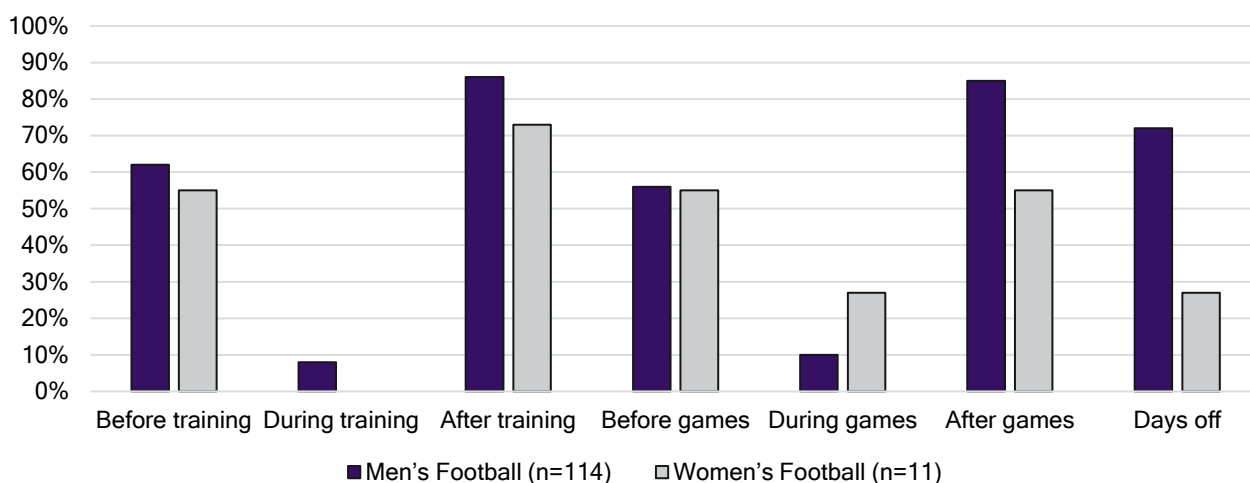
Typically, players reported **first using snus and nicotine pouches to relax** (men = 41%; women = 64%)

“speaking with some players that they’re obviously in a high demand and high stress environment and that obviously gives them some kind of relaxation.” (staff)

The most common times for use were after training (men = 86%, women = 73%), after games (men = 85%, women = 55%), and days off (men = 72%, women = 27%) indicating an attempt to destress:

“You see it a lot when we're travelling on the bus the night before or to a game. There'd be quite a lot of them on snus. So yeah, it seems to be that relaxation and coping mechanism that that they're using in the stressful environment.” (staff)

Figure 1. When do you use Snus?



When using snus and nicotine pouches, a **relaxing sensation** was the most reported effect (men = 56%, women = 36%)

“That's the feedback that I've had from players it allows them to relax before the game and switch off as such and feel less anxious, then after a game allows them to do the same.” (staff)

The majority of players in both samples **did not use snus or nicotine pouches as an alternative to smoking** (men = 95%, women = 91%).

Key Point 3: Socially Driven Use

In both samples, a large group of players reported trying snus initially because their **teammates used it and a desire to try it for themselves**. Staff reported that often younger players and new squad members would use nicotine products to fit in with the senior squad:

“then young players do it because they see a senior player do it, and then before you know it, 75% of the changing room are doing this.” (staff)

“So having briefly spoken to some of the players, they said that obviously when they go up to the first team or that’s their goal, if they see players and obviously we know it can be prevalent within the Premier League as well. When you see players that at the top level or within the first team taking it, it then puts a perception to the players and further down the academy that is maybe something that they need to do either to enhance their performance or maybe to conform within the social setting within the group.” (staff)

“a lot of lads coming up to first team level. It's an easy in, as daft as that sounds, you know, it's not as bad as smoking allegedly, so it's an easy way to kind of fit into the group” (staff)

The social nature of use was also evident in comments from players about the time in which they used nicotine products:

“I only use it on nights out with as a replacement for alcohol and social never on a daily basis” (player).

“Only take it when drinking” (player).

“Only used on a night out or to help sleep” (player).

“I only used it on occasional nights out” (player).

Further evidence of recreational, socially driven use is provided by players reporting that they use snus because most of the people they spend time with use snus and due to boredom.

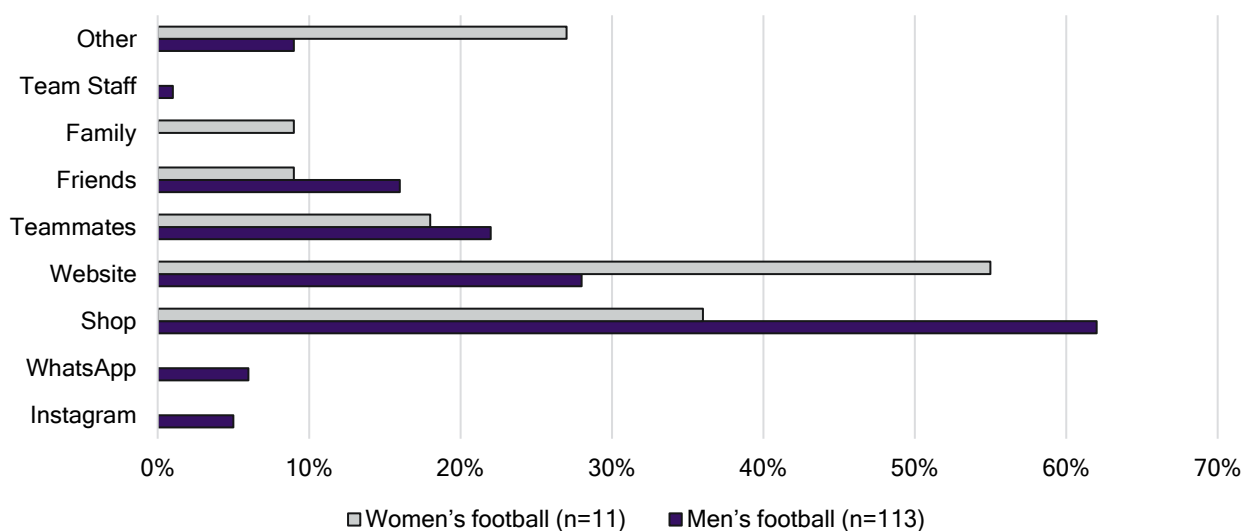
Key Point 4: Sources

In men's football, players typically sourced snus and nicotine pouches from shops (62%), websites (28%), and teammates (22%).

In women's football, players typically sourced snus and nicotine pouches from shops (36%) and websites (55%).

"I still think that a lot of them [players] are ordering online. I've heard players spending fortunes and buying in bulk and then I think buy enough for each other as well." (staff)

Figure 2. Where do you get Snus from?



It was also common for players in both samples to purchase snus and nicotine pouches **from multiple sources and switch between products** if they run out:

"some players will just buy the more easily accessible ones [nicotine pouches] if they run out of the snus and tobacco-based pouches." (staff)

The risk of purchasing snus through websites and social media sources is the increased risk of contamination and counterfeit products that may cause an adverse anti-doping finding. Although the likelihood is small, this should be emphasised to players.

Key Point 5: Performance Impacts

39% and 55% of current users in the men's and women's game respectively indicated a perceived performance benefit from snus and nicotine pouches. **Mental readiness was the most reported performance benefit**, but only a small group of players reported using snus during training (men = 8%, women = 0%) and games (men = 10%, women = 27%). That most players did not perceive a performance benefit is backed up by the small number of players who started using snus to improve performance, although some staff were aware of players who used snus for training and games:

“some strikers and wide players I think they thought it was the performance benefit for being more relaxed when it comes to not snatching opportunities if the ball comes through to them, and just being a little bit more relaxed and calm, or when it comes to key points in the game.” (staff)

“he said within the last three years, he feels he's performed a lot better cause he's a very anxious character.” (staff)

“I did have one player who said he uses it to manage weight and he said he'd be as big as a house if he didn't use it. You know, in terms of appetite suppression and food intake” (staff)

Amongst staff there was also wide range of anecdotal observations regarding **potential negative performance impacts**, however, greater evidence is required to substantiate these concerns:

“From a performance point of view of well, if you are anxious before a game, what are you doing other than taking snus to chill you out? Have you got a good routine?” (staff)

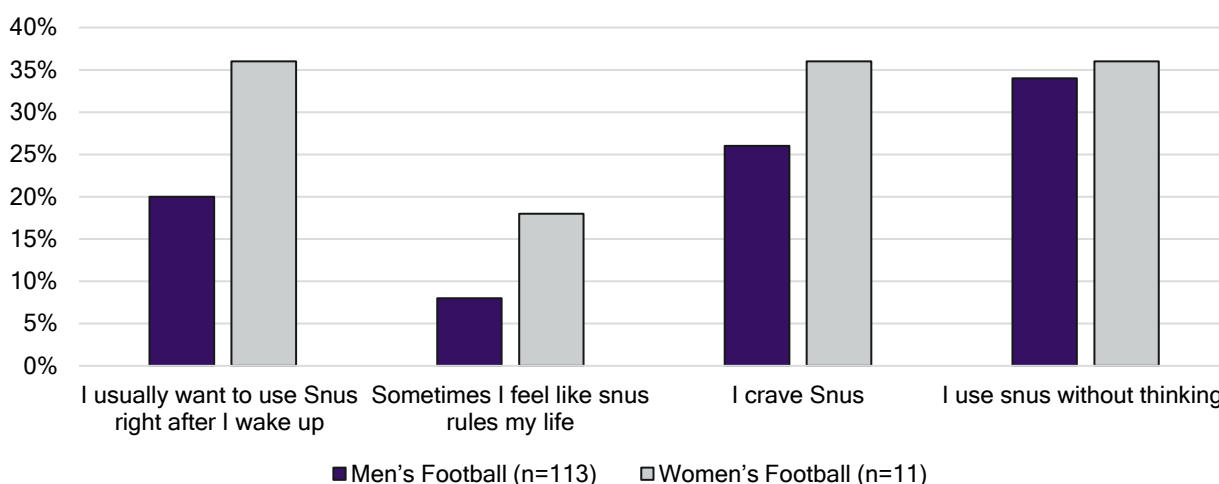
“Because even after games it's quite prevalent after games, especially night games, a lot of these players struggled to sleep. The amount of caffeine they take anyway before the game, the adrenaline of an evening game, and then they'll put a snus in thinking that helps him relax and sleep. And you actually find that it makes it worse, and they don't get the optimum recovery that they need” (staff)

“Then you know if your chilled out, if you're out on the pitch, how could you respond to the stimuli you need to. Maybe putting you at risk of injury and stuff.” (staff)

Key Point 6: Dependence

Most players in both samples reported at least one indicator of primary nicotine dependence (men = 53%, women = 73%) including use driven by cravings, without awareness or intention, increased tolerance, and/or loss of control. Reported instrumental benefits of nicotine use included appetite management, stress relief, focus, relieving boredom, and socialising.

Figure 3. Why do you use Snus currently?



The addictiveness of nicotine was recognised in the comments of players and staff:

“Incredibly addictive. Can’t just be banned. 12 year user.” (player)

“I have quit twice for 8 months but always seem to start doing it again. Find it hard to quit when I’m around it all day.” (player)

“So we’ve got an older pro that has been in the game. He’s [age removed] and he’s used it for 10 years or so. ‘Why did you start it in the first place?’ and he just said it was kind of the thing to do at the time and he’s used it for 10 years, now he’s just hooked on it. The addiction, doesn’t use it for anything other than that.” (staff)

“So one of them [players] openly said to me. I’ve been taking this stuff for three years. I can’t just stop it.” (staff)

“I think a couple that I know of have successfully stopped and I think that’s just because they just realized it wasn’t great to be constantly using it and I think they also saw the side effects of constantly wanting that craving, craving that substance, that nicotine.” (staff)

Key Point 7: Health Impacts

Most players in both samples had **not received any education** about snus use (men = 58%, women = 86%).

61% of male players and 55% of female players reported short-term withdrawal symptoms and the most **common withdrawal symptoms** across both samples were cravings, irritableness, restlessness, and anxiety. Other reported withdrawal effects included light-headedness, difficulty sleeping, poor concentration, and sad mood.

“I know two players that have tried to stop and sort of mild to moderate side effects of that and one of them being I wouldn't say depression but more anxious where they required to speak to the psychologist” (staff)

“They would get those withdrawal symptoms and from a performance perspective, just from an observational point of view, taking aside you know, my own opinions of players shouldn't be taking it. Is that from their perspective, they're not gonna want to do anything [quit] that's gonna be a detriment to their performance.” (staff)

Players also reported **negative experiences when using snus** and nicotine pouches such as anxiety, vomiting, headaches, difficulty sleeping, and a tight chest.

Staff also anecdotally reported a range of potential physical health concerns including increased risk of injury, delayed bone and soft tissue healing, oral health problems, and cardiac issues based on their observations, which warrant further investigation and analysis:

“We've had one player, had a significant tachycardia and that had no other explanation other than the fact that he had used snus the night before, overnight.” (staff)

“When you think about some of the medical risks and obviously cancer in your mouth problems, your oral health problems, it's for us, we're trying to minimize all these things and for example what we just started to do is we've registered them all with a local dentist” (staff)

“Quite a lot of the players who were injured certainly at my last club were also snus users. And so, was there a link between the robustness or their ability to remain injury free and how heavily they were using these products?”

Key Point 8: Difficulty Quitting

Players experienced **great difficulty quitting** due to cravings and the addictiveness of nicotine, the prevalence of use in football environments, the ready availability of nicotine pouches in shops, and concern over admitting they have a dependence.

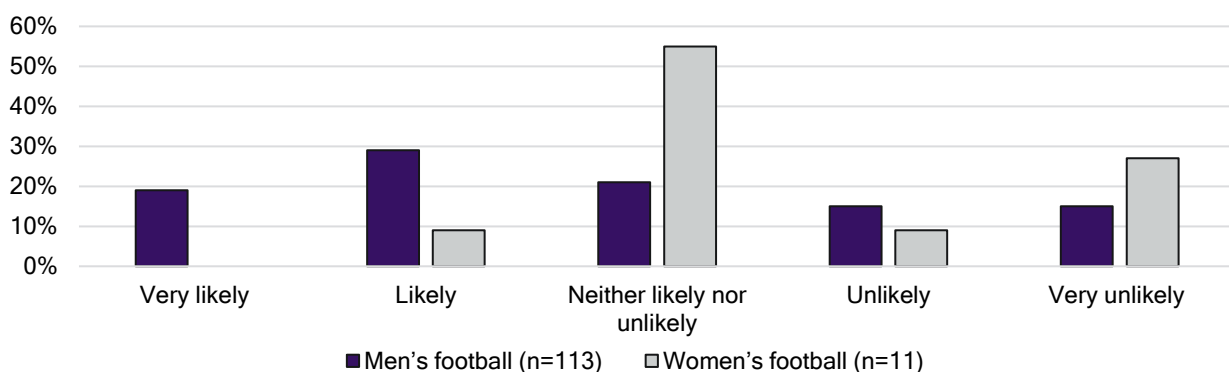
“I’m sure there’s cases of players trying to get off. Somebody gets injured in that time, but there’s probably cases where they’re trying to come off, they get injured. They have a spike in their stress because they’re injured and then they’re back on it.” (staff)

“a number of players have come seeking help because they don't know the risks. They want to stop, but they failed” (staff)

“I spoke to another player pro that’s been in the Premier League and Championship most of his career. Heavy user. I’d love to come off it, but I can’t. It’s just everywhere I look. Every other player’s taking it, go to fill my car up. It’s at the pump stands and it’s just too easy.” (staff)

“one of the big issues with wanting to come off it, which some of them do, they’ve openly said they wanna get off it is that they find it difficult because there’s that many on it. It’s always around, so it’s within the group, so you can’t get away from it. So we’ve had lads who’ve given up for short periods of time, but then you know the lads that sat next to them in the changing room, they’ve had a bad day, so it’s like give us one of them” (staff)

Figure 4. How likely are you to attempt to quit using snus in the next year?



Approximately **half of current users in the men’s game indicated wanting to quit** in the next 12 months but most users in the WSL did not intend to quit.

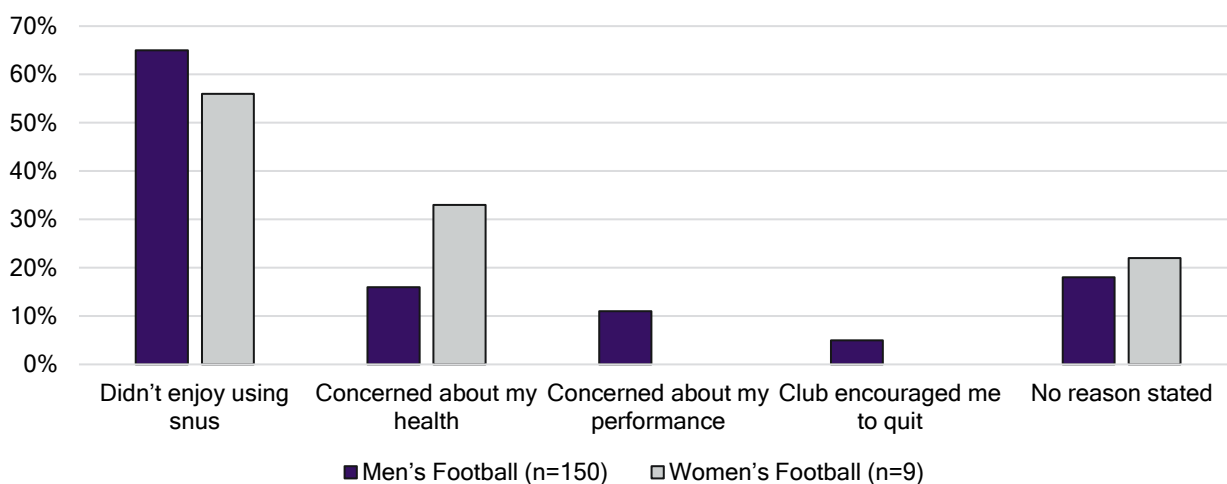
Key Point 9: Protective Factors

Motivations to stop using snus included **unpleasant experiences during use as well as health and performance concerns**.

“I used it once as I saw all footballers using it and thought it was something that was good or used to help relax you for games as all these players were doing it. After using it once, I hated it and will never do it again” (player)

“Tried it once or twice, felt a little bit relaxed but that was it so felt it was pointless to keep trying it and didn’t want to affect my performance” (player)

Figure 5. Why did you stop using snus?



In both samples, most players reported a generally negative view of nicotine products and health concerns as reasons for not trying. Player comments supported that a **bad first experience** was a reason for not using snus or nicotine pouches as well.

“Used once, sickening and non-enjoyable” (player)

“I enjoyed the effects but it made me feel to nauseous to carry on.” (player)

“I used it once to try it and didn’t like it. Never used it again” (player)

Supporting Players and Staff

Educational Materials on Health and Performance

A large percentage of players had not received any education on snus or nicotine pouches. Developing educational resources that include information about the health and performance impacts of use is critical to enable players to make an informed decision.

“Health advice and actually explained to players the kind of risks of using it because everybody pretty full well now knows smoking, these are the outcomes, but few, to be honest, I think probably people aren’t really aware of what could happen”

Cessation Support Strategies

Potential strategies to help players looking to quit or reduce use include weaning down tools, support groups, and cessation medication. An interdisciplinary approach involving medical, performance, and psychology staff can offer a holistic approach.

“I think a weaning down tool would be really useful for players and to show them how they can be gradually come off. There’s a lot available for things like cigarettes. But if there are protocols or guidance as to how to wean off snus, that can be really helpful” (staff)

Stress Management Techniques

Given that use in a performance and recreational context was driven by a desire to relax, providing alternative strategies, and helping players manage stress should be pivotal to supporting player welfare.

“we need to give them something else if they are taking it for that reason, which is, you know, the high stimulus environment, stressful environment and they need, they need to have other ways to cope with that.”

Career Aftercare

For academy and senior players released from contracts, aftercare with cessation should be offered.

“And my worry is that like a player could come into an academy, use this stuff. Then not getting the academy contract, but still be using the stuff and then it’s a gateway to other things like I’ve had two cases in my previous role

where I knew players were using it and then they went on to use nitrous oxide and that's a very similar taboo”

Avoid Club Bans

Evidence from individuals who had been involved in club environments where use was banned reported that this did not deter players and made it harder for players looking to quit to seek support.

“Our old sporting director put a fine on it, so if anyone was spotted with snus in the training ground, it was a week’s wages and people got done for it. But all that happens the players just protected each other. So if they saw it lying around, they picked it up and got rid of it because the majority of them took it.”

External Support

Players seeking support should have access to external care as there may be hesitancy to seek help internally in case their use is viewed negatively or impacts selection.

“if it is an addiction for anything and they don't want to see someone within a club environment and this is probably an issue itself, but due to the fear of coaching staff becoming aware, fear of being dropped from a team, I think they need to have that external option as well and know that it's there, which I'm not sure all players do especially for something like this”

Normalise Help-seeking Behaviour

Messaging around snus and nicotine pouch use should be non-judgmental and where appropriate promote successful stories of other players quitting.

“I think more help for players who do want to come off it deep down. They don't wanna maybe admit that to other players, it seems like they're weak, but they actually don't want to be taking this product and they want to come off of it. But it's so prevalent, and there's so little help to them, and I guess they probably feel a little bit embarrassed? ... A little bit embarrassed to come and find someone actively themselves and say well, I'm struggling with an addiction to this product, and I need some help.”

Limitations and Future Research

Having established the prevalence of use in English football as well as motivations for use, sources, and perceived effects, there are recognised limitations to this research. First, players were only surveyed once, so it is not possible to make any causal statements or measure changes in behaviour. Second, as the questions were self-reported, there is the potential for participants to not correctly remember answers. Third, despite being offered anonymity, players may have still wanted to conceal their use leading to underreporting of prevalence and effects. Last, the work only focused on current players that may display different behaviours to retired football players.

Based on these limitations, there are opportunities for additional research to help support player wellbeing:

1. Experimental research in football specific populations is required to determine any potential impact on performance, recovery, and injury.
2. From an educational perspective, there is a need to understand what methods and content are most effective at informing players.
3. Further research is required in the women's game given the small sample size of current snus users to confirm findings.
4. Longitudinal studies tracking any changes in use and attitudes can show any behavioural shifts in use.
5. Links to other wellbeing issues, such as nitrous oxide use, gambling, or social media abuse, should be explored.

Summary

1. Prevalence: snus and nicotine pouch use are common in men's and women's English professional football.
2. Motivation: nicotine is primarily used by players as a recreational substance to relax.
3. Motivation: widespread use and availability encourage initiation and use.
4. Motivation: bad experiences using nicotine products and health concerns are protective factors.
5. Sources: players purchase products from multiple sources increasing the risk of contamination and counterfeit products.
6. Performance: Mental readiness was the main perceived performance benefit.
7. Health: players report nicotine dependence and a wide range of negative symptoms from withdrawal.
8. Dependence: players are reporting concerns about their use but struggling to quit.
9. Player care: support should be personalised, external, and avoid stigmatising help seeking behaviour.

Contact Information

If you would like further details about any of the information in this report, please contact either Dr Daniel Read (d.read3@lboro.ac.uk), Dr Ed Cope (e.cope@lboro.ac.uk), or Dr Lee Taylor (l.taylor2@lboro.ac.uk).

If you would like more information about the support the PFA provides around snus use, please contact the Wellbeing Department at wellbeing@thepfa.com or ring the PFA's 24/7/365 Confidential Counselling Helpline on 07500 000 777.

References

1. Benowitz NL. Nicotine Addiction. *N Engl J Med.* 2010;362(24):2295-2303. doi:10.1056/NEJMra0809890
2. Hughes JR. Effects of Abstinence From Tobacco: Valid Symptoms and Time Course. *Nicotine Tob Res.* 2007;9(3):315-327. doi:10.1080/14622200701188919
3. Moylan S, Jacka FN, Pasco JA, Berk M. Cigarette smoking, nicotine dependence and anxiety disorders: a systematic review of population-based, epidemiological studies. *BMC Med.* 2012;10(1):123. doi:10.1186/1741-7015-10-123
4. Valen H, Becher R, Vist GE, et al. A systematic review of cancer risk among users of smokeless tobacco (Swedish snus) exclusively, compared with no use of tobacco. *Int J Cancer.* n/a(n/a). doi:10.1002/ijc.34643
5. Titova OE, Baron JA, Michaëlsson K, Larsson SC. Swedish snuff (snus) and risk of cardiovascular disease and mortality: prospective cohort study of middle-aged and older individuals. *BMC Med.* 2021;19(1):111. doi:10.1186/s12916-021-01979-6
6. Byhamre ML, Araghi M, Alfredsson L, et al. Swedish snus use is associated with mortality: a pooled analysis of eight prospective studies. *Int J Epidemiol.* 2020;49(6):2041-2050.
7. Kallischnigg G, Weitkunat R, Lee PN. Systematic review of the relation between smokeless tobacco and non-neoplastic oral diseases in Europe and the United States. *BMC Oral Health.* 2008;8(1):1-20.
8. Azzopardi D, Liu C, Murphy J. Chemical characterization of tobacco-free “modern” oral nicotine pouches and their position on the toxicant and risk continuums. *Drug Chem Toxicol.* 2022;45(5):2246-2254. doi:10.1080/01480545.2021.1925691
9. Mündel T. Nicotine: Sporting Friend or Foe? A Review of Athlete Use, Performance Consequences and Other Considerations. *Sports Med.* 2017;47(12):2497-2506. doi:10.1007/s40279-017-0764-5
10. Kasper AM, Close GL. Practitioner observations of oral nicotine use in elite sport: You snus you lose. *Eur J Sport Sci.* 2021;21(12):1693-1698. doi:10.1080/17461391.2020.1859621
11. Heishman SJ, Kleykamp BA, Singleton EG. Meta-analysis of the acute effects of nicotine and smoking on human performance. *Psychopharmacology (Berl).* 2010;210(4):453-469. doi:10.1007/s00213-010-1848-1
12. Catoire S, Nourredine M, Lefebvre S, et al. Tobacco-induced sleep disturbances: A systematic review and meta-analysis. *Sleep Med Rev.* 2021;60:101544. doi:10.1016/j.smr.2021.101544
13. Schwartz A, Bellissimo N. Nicotine and energy balance: A review examining the effect of nicotine on hormonal appetite regulation and energy expenditure. *Appetite.* 2021;164:105260. doi:10.1016/j.appet.2021.105260

Appendices

Interview Participants

Role	League
Physiotherapist	Championship
Head of Fitness and Conditioning	Championship
Head of Football Development and Performance	League One
Head of Medical	League One
Head of Human Performance	Championship
Club Doctor	Premiership
Head of Performance	Championship
Head Physiotherapist	League Two
Club Doctor	Premiership
Player Education	Governing Body
Club Doctor	Championship
Head of Player Care	League One
Head Physiotherapist	League One
Player Education	Governing Body
Director of Football	League Two
Physiotherapist	National League

1. How prevalent is snus use in English football?

	Men's Football (n=628)	Women's Football (n=51)
Never used snus	58%	61%
Have used snus	42%	39%
Currently use snus	18%	22%
Previously used snus	24%	18%

1. How prevalent is snus use in English football?

Do you use snus or nicotine pouches?	Men's Football (n=119)	Women's Football (n=11)
Use snus	33%	36%
Use nicotine pouches	52%	55%
Use both	16%	9%

1. How prevalent is snus use in English football?

In a typical week, on how many days do you use snus?	Men's Football (n=116)	Women's Football (n=11)
1	3%	0%
2	4%	0%
3	7%	9%
4	5%	9%
5	4%	9%
6	1%	18%
7	60%	36%
Don't know	16%	18%

1. How prevalent is snus use in English football?

In a typical day how many pouches do you use?	Men's Football (n=116)	Women's Football (n=11)
1-2	21%	55%
3-4	17%	0%
5-6	18%	0%
7-8	11%	18%
9-10	9%	0%
11+	24%	27%

1. How prevalent is snus use in English football?

How many years have you been using snus?	Men's Football (n=116)	Women's Football (n=11)
1	20%	27%
2	17%	27%
3	16%	18%
4	15%	9%
5+	33%	18%

1. How prevalent is snus use in English football?

When do you use snus?	Men's Football (n=114)	Women's Football (n=11)
Before training	62%	55%
During training	8%	0%
After training	86%	73%
Before games	56%	55%
During games	10%	27%
After games	85%	55%
Days off	72%	27%

2. Why do players use snus in English football?

Why did you first use snus?	Men's Football (n=114)	Women's Football (n=11)
Thought it would help my performance	2%	9%
Thought it would help me relax	41%	64%
My family use it	1%	0%
My teammates were using it	56%	73%
I wanted to try it for myself	38%	36%
Due to injury	9%	0%

2. Why do players use snus in English football?

Why do you use snus currently? (primary dependence)	Men's Football (n=113)	Women's Football (n=11)
I usually want to use snus right after I wake up	20%	36%
Sometimes I feel like snus rules my life	8%	18%
I crave snus	26%	36%
I use snus without thinking	34%	36%

2. Why do players use snus in English football?

Why do you use snus currently? (secondary dependence)	Men's Football (n=113)	Women's Football (n=11)
Snus helps me control my hunger and eating	9%	9%
I enjoy the taste of snus	9%	9%
Most of the people I spend time with use snus	20%	45%
Snus helps me feel better in seconds	12%	9%
Snus helps me deal with stress	43%	55%
Particular sights and smells remind me to use snus	0%	0%
Snus helps me focus	17%	18%
Snus keeps me company	7%	0%
Boredom	47%	55%

2. Why do players use snus in English football?

Do you use snus as an alternative to smoking?	Men's Football (n=115)	Women's Football (n=11)
Yes	5%	9%
No	95%	91%

2. Why do players use snus in English football?

Have you previously received education about snus?	Men's Football (n=626)	Women's Football (n=51)
Yes	42%	14%
No	58%	86%

2. Why do players use snus in English football?

Why did you stop using snus?	Men's Football (n=150)	Women's Football (n=9)
Didn't enjoy using snus	65%	56%
Concerned about my health	16%	33%
Concerned about my performance	11%	0%
Club encouraged me to quit	5%	0%
No reason stated	18%	22%

2. Why do players use snus in English football?

Why don't you use snus?	Men's Football (n=346)	Women's Football (n=29)
I had a bad first experience trying	4%	0%
I don't like using nicotine	39%	58%
I have health concerns about using snus	40%	61%
I have performance concerns about using snus	29%	23%
I have seen other players have bad experiences using snus	30%	16%

3. Where do players source snus?

Where do you get snus from?	Men's football (n=113)	Women's football (n=11)
Instagram	5%	0%
WhatsApp	6%	0%
Shop	62%	36%
Website	28%	55%
Teammates	22%	18%
Friends	16%	9%
Family	0%	9%
Team Staff	1%	0%
Other	9%	27%

4. What are the perceived health and performance effects of snus?

Do you think using snus improves any of the following?	Men's football (n=45)	Women's football (n=11)
Training performance	9%	9%
Matchday performance	7%	9%
Post-match recovery	9%	9%
Nutrition	0%	18%
Physical fitness	2%	9%
Mental readiness	29%	55%

Note. Percentages reflect those players who perceived a performance benefit.

4. What are the perceived health and performance effects of snus?

Have you experienced any of the following effects from using snus?	Men's football (n=84)	Women's football (n=11)
Increased energy	6%	9%
Difficulty sleeping	8%	9%
Change in appetite	13%	0%
Anxiety	6%	9%
Vomiting	5%	0%
Headaches	13%	9%
Increased focus	13%	27%
Relaxation	56%	36%
Tight chest	3%	0%

4. What are the perceived health and performance effects of snus?

Have you ever experienced any of the following effects when not using snus?	Men's football (n=71)	Women's football (n=11)
Light-headedness	15%	9%
Difficulty sleeping	15%	9%
Poor concentration	9%	9%
Craving for snus	36%	36%
Irritable	15%	27%
Sad mood	5%	9%
Anxiety	9%	36%
Restlessness	13%	18%
Change in appetite	8%	9%

4. What are the perceived health and performance effects of snus?

How likely are you to attempt to quit using snus in the next year?	Men's football (n=113)	Women's football (n=11)
Very likely	19%	0%
Likely	29%	9%
Neither likely nor unlikely	21%	55%
Unlikely	15%	9%
Very unlikely	15%	27%