Science and Medicine in Football

ISSN: 2473-3938 (Print) 2473-4446 (Online) Journal homepage: www.tandfonline.com/journals/rsmf20

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To cite this article: Nessan Costello, Stephanie Roe, Susan H Backhouse & Meghan Rowenna Noelle Bentley (18 Jun 2025): Barriers and enablers to implementing the UEFA Consensus Statement on Nutrition: insights from sport nutrition practitioners in the English Premier League, Science and Medicine in Football, DOI: 10.1080/24733938.2025.2517055

To link to this article: https://doi.org/10.1080/24733938.2025.2517055

Published online: 18 Jun 2025.

SCIENCE AND MEDICINE IN FOOTBALL
https://doi.org/10.1080/24733938.2025.2517055

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Barriers and enablers to implementing the UEFA Consensus Statement on Nutrition: insights from sport nutrition practitioners in the English Premier League

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ABSTRACT

Background: Despite the importance of evidence-based nutrition in elite football, Premier League players often exhibit sub-optimal dietary behaviours, highlighting the need for improved guideline implementation.

Purpose: This study used the COM-B model and Theoretical Domains Framework (TDF) to explore sport nutritionists' perceived barriers and enablers to applying the UEFA Consensus Statement on Nutrition.

Method: Twelve lead sport nutritionists from English Premier League clubs took part in semi-structured interviews (1 hour ± 44 mins). The interviews were structured using the COM-B and TDF and analysed thematically.

Results: Six key themes were identified, representing six barriers and two enablers, encompassing all three components of the COM-B model and seven TDF domains. *Psychological capability* barriers included challenges in changing players' dietary behaviours. *Reflective motivation* was hindered by doubts regarding the scientific basis of carbohydrate and body composition guidelines, alongside concerns over players' ability to practically adhere to carbohydrate recommendations. *Physical and social opportunity* barriers involved restricted time and support for ongoing personal and professional development. Practitioners desired greater autonomy over the nutrition service, which was either enabled or constrained by the club' social environment. As an enabler, female practitioners' strong interpersonal skills (*psychological capability*) supported implementation; however, they also faced gender-related challenges navigating male predominate environments, making the *social opportunity* for implementation more complex.

Conclusion: Implementing nutrition guidelines in elite football is challenging. Overcoming barriers-by boosting practitioner confidence, belief in guidelines, professional development support, and autonomy-is key to improving uptake of UEFA recommendations and enhancing player dietary adherence in the English Premier League.

ARTICLE HISTORY
Received 21 October 2024
Revised 14 April 2025
Accepted 1 May 2025

KEYWORDS
Soccer; football; practitioner perspectives; performance nutrition

Introduction

Senior male professional football players have specific dietary requirements to meet the unique physical and technical demands of their sport (Collins et al. 2021). Football training and match-play involve intermittent periods of high- and low-intensity activity, integrating linear, curved, and multi-directional movements with important technical and tactical actions (Allen et al. 2024; Morgans et al. 2024). In the English Premier League, these demands have increased significantly in recent years. High-intensity running and high-intensity actions have risen by approximately 30% and 50%, respectively, while sprint distances and the number of sprints completed have increased by 35% and 85% (Barnes et al. 2014). Between the 2006/07 and 2012/13 seasons, players completed ~40% more passes with a 7% improvement in accuracy (Barnes et al. 2014). Furthermore, from 2014 to 2019, sprint and high-intensity running distances increased by an additional ~12–15% across all positions (Allen et al. 2024). These escalating demands are compounded by intensive training regimes, which surpass those of lower-tier leagues (such as the English Football League Championship; Morgans et al. 2024). Additionally, fixture congestion, extended match durations, and prolonged competitive seasons – spanning domestic leagues, international club tournaments, and national team competitions – exacerbate the physical and technical challenges faced by English Premier League players (FIFPRO 2023).

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Recognising the critical role of nutrition in meeting these demands, the Union of European Football Associations (UEFA) developed its Consensus Statement on Nutrition (Collins et al. 2021). This document provides evidence-based recommendations to optimise dietary practices, enhance physical performance, and support player health in elite football, covering key areas such as match-day and training-day nutrition, body composition, stressful environments and travel, cultural diversity and dietary considerations, dietary supplements, and rehabilitation. Its importance has been widely acknowledged by internationally acclaimed coaches (Wenger et al., 2021) and player support staff (Meyer et al., 2021). However, despite the value of these guidelines, practical implementation remains a significant challenge. Evidence suggests that English Premier League players consistently under consume dietary carbohydrates, both on training days (4.2 $g.kg^{-1}.day^{-1}$ vs. the recommended 6.0 $g.kg^{-1}.day^{-1}$) and match days (6.4 $g.kg^{-1}.day^{-1}$ and 17 $g.hour^{-1}$ vs. the recommended 8.0 $g.kg^{-1}.day^{-1}$ and 60 $g.hour^{-1}$; Anderson, Naughton et al., 2017; Kasper et al. 2024). These nutritional deficits may negatively impact on-pitch performance, delay post-match recovery, and elevate the risk of injury and illness (Williams and Rollo et al., 2015; Thomas et al. 2016; Collins et al. 2021).

The implementation of the UEFA Consensus Statement is further complicated by a range of individual, social, and environmental factors. For example, nutritional adherence to best practices in the English Premier League is shaped by player's backgrounds, social connections, and both personal and club wealth (Foo et al., 2024). Additional influences include individual nutrition knowledge, cooking skills, access to high-quality food and nutritionist support, living arrangements, performance-driven motivation, and role modelling, all of which have been shown to be particularly important in academy players (Carter et al. 2023). Service-related challenges, such as conflicting or inaccurate advice from non-accredited staff and the mismanagement of body composition, can further hinder players' ability to adhere to optimal nutrition practices (Bentley et al. 2019; Foo et al., 2024). These challenges often lead to misconceptions surrounding food, supplements, and body image, which can negatively impact fuelling behaviours (Bentley et al. 2021). Collectively, these barriers highlight the challenges practitioners face in implementing the UEFA Consensus Guidelines, which, while evidence-based, could benefit from being more practically informed and directive to reduce ambiguity and support consistent application in elite football environments.

To address these challenges, this study employs the Capability, Opportunity, Motivation – Behaviour (COM-B) model (Michie et al. 2011) and the Theoretical Domains Framework (TDF) (Cane et al. 2012) to qualitatively explore the barriers and enablers to implementing the UEFA Consensus Statement on Nutrition (Collins et al. 2021), as perceived by sport nutritionists working within the English Premier League. In comparison to pre-existing theories, the COM-B model recognises the importance of automatic processes (e.g., emotions and impulses) alongside reflective cognitive processes (e.g., beliefs and intentions) and shifts our focus from individual cognition to a wider perspective which acknowledges the significance of the physical and social environment in shaping human behaviour (Bentley et al. 2021). For sport nutritionists to implement the UEFA Consensus Statement on Nutrition, they must have the Capability (i.e., the skills and knowledge), Opportunity (external and social factors that enable behaviour), and Motivation (automatic and reflective processes driving behaviour) (Michie et al. 2011). The COM-B can be further expanded into the TDF which is a synthesis of 33 behavioural theories into 15 domains, providing a detailed framework for identifying the cognitive, social, and environmental influences on human behaviour (Cane et al. 2012).

By advancing our understanding of the barriers and enablers to implementing the UEFA Consensus Statement on Nutrition, behavioural interventions which seek to enhance implementation can be developed using the same theoretical process. Specifically, unlike pre-existing theories, the Behaviour Change Wheel (BCW) provides recommendations for change, ensuring the intervention-(s) have a clear link to the overarching analysis of the target behaviour, thus making their content relevant and timely to the behaviour and context (Michie et al. 2014). Such integration is particularly valuable in the complex, multidisciplinary context of elite sport, where behaviour change interventions must balance scientific rigor with practical feasibility (Atkins et al., 2017), facilitating the effective integration of evidence-based nutrition strategies within professional male football.

Methods

Philosophical stance

Situated within an interpretive paradigm, this study was informed by a relativist ontology and constructionist epistemology (Sparkes and Smith 2013). In this perspective, social reality is humanly constructed and influenced. Consequently, our epistemological stance shapes our understanding of the findings, considering them the product of the interaction between the

research team and the researched (Denzin and Lincoln 2011). As reflexive researcher-practitioners, the dynamics of this intersubjective relationship is informed by our autobiographies, values, and beliefs, which have been shaped and enriched by our prior involvement in sport and our professional experiences in providing nutritional guidance and education to athletes and football players competing within the English Premier League.

Study aim and design

A programme of research is being conducted to develop a theory-based intervention to improve the implementation of evidence-based sport nutrition guidelines in professional football. This present study is the initial phase of the intervention design process. Employing a qualitative descriptive design, like those of Bentley et al. (2019), Bentley et al. (2021), and Carter et al. (2023), this study involved semi-structured interviews with lead sport nutritionists to identify barriers and enablers to the implementation of evidence-based nutrition practice within the English Premier League. The primary target behaviour was implementation of the UEFA Expert Group Statement on Nutrition in Elite Football (Collins et al. 2021).

Participants and recruitment

A purposive sampling approach was employed to recruit participants currently implementing evidence-based sport nutrition guidelines in the English Premier League. Participants were eligible on the basis that they had (1) at least 2 years of experience as a sport nutritionist, and (2) were responsible for leading nutritional services for the senior male team of an English Premier League club. Participants were recruited through emails and the personal contacts of the authorship team. The study gained favourable opinion from the Institutional Research Ethics Committee at Leeds Beckett University (application reference: 90228).

Participant characteristics

Twelve sport nutritionists ($M = 9$ and $F = 3$) were recruited. Participants had a mean age of 32 ± 4 years and an average of 8 ± 3 years of experience. Six participants were Sport and Exercise Nutrition Registered (SENR) practitioner registrants, while four were SENR graduate registrants. Two participants did not hold a professional accreditation.

Procedure and setting

Participants were invited to take part in an online semi-structured interview via Microsoft Teams. Remote semi-structured interviews were chosen to facilitate the sharing of practitioner's independent thoughts (McLafferty 2004) and minimise the time and logistical burden placed on participants. In the week prior to each interview, participants were sent the UEFA Expert Group Statement on Nutrition in Elite Football (Collins et al. 2021) and asked to familiarise themselves with all content as it relates to elite male players (expert group topics 1–7).

Interviews ranged in length from 1 hour and 10 minutes to 2 hours (mean ± standard deviation: 1 hour ±44 minutes) and took place between March and April 2022. This range allowed for the collection of comprehensive data (Robson and McCartan 2017). The interviews were both audio and video recorded, ensuring for accurate transcription (Creswell 2013).

A semi-structured interview guide was developed by SR, SB, and MB, with open-ended questions based on the COM-B and TDF model for understanding behaviour. At the start of each interview, participants were asked five open-ended questions designed to explore their role, philosophy, and practices as sport nutrition practitioners working in English Premier League football. The questions also sought to understand how their approach has evolved over time.

Each COM-B component and TDF domain was assessed using targeted semi-structured interview questions. For example, exploring *psychological capability* (*skills*), participants were asked, 'Do you have specific skills or techniques that enable you to deliver evidence-based practice in football (e.g., communication, relationship building, teamwork, or leadership skills)?'. *Reflective motivation* (*intentions*) was explored through, 'We often have good intentions that we don't always follow through on – does this apply to your implementation of evidence-based practice?'. *Social opportunity* (*social influences*) was discussed by asking, 'How would you describe your player support team? Do they help or hinder your implementation of evidence-based practice?'.

Participants were encouraged to elaborate using prompts like 'Can you tell me a bit more about that?', or 'Do you have further examples of this?'. Debrief questions then assessed views on necessary changes for evidence-based practice, identified additional influencing factors, and gathered final thoughts on the discussion. This approach facilitated an in-depth exploration of the COM-B and TDF categories encompassing capability, opportunity, and motivation, allowing practitioners to express their thoughts, feelings, and individual considerations and provided a structured means to explore the

multifaceted perspectives that sport nutritionists bring to their practices (Sparkes and Smith 2013).

Prior to data collection, the interview guide was pilot tested with four SENR registered sport nutrition practitioners working in professional male football and rugby who were not part of the final sample. This pilot testing helped refine questions that disrupted conversational flow or contained ambiguities (Sparkes and Smith 2013). Through a collaborative review process, two questions were removed to reduce redundancy, and two new questions were added to prompt deeper reflection on the implementation of the UEFA Consensus Statement. For example, one new question – 'Can you describe how you implement the 1) carbohydrate and 2) body composition guidelines?'.

Data analysis

This research focuses on identifying, analysing, and interpreting themes within the data (Braun and Clarke 2014). Therefore, reflexive thematic analysis was used to interpret the semi-structured interviews (Braun and Clarke 2019). Semi-structured interviews were transcribed verbatim by SR, followed by a six-stage thematic analysis to interpret the data (Braun and Clarke 2019). The first stage, *immersion*, involved becoming deeply familiar with the data by listening, transcribing, cross-referencing, reading, and repeatedly reviewing the transcripts. During this stage, SR and MB maintained a detailed log of insights relevant to the research question. In the second stage, *generation of initial codes*, SR employed an inductive approach. The coded data were then examined further to develop themes (stage 3) by MB, related to the perceived barriers and enablers in implementing evidence-based sport nutrition practices. During the *reviewing themes* stage (stage 4), SR, SB, and MB engaged in iterative discussions to refine the themes, integrating their assumptions, expertise, and experiences with the data (Braun et al. 2016). Stages 5 and 6, *defining and naming themes* and *writing the report*, led to the creation of a thematic map, which deductively linked the identified themes to the three COM-B components and 15 TDF domains. This culminated in the analytical narrative presented in this manuscript. Throughout the entire process, pseudonyms were used, and training venue names were omitted to protect the anonymity of both participants and clubs.

Criteria for judging the quality of the research

Adopting a relativist perspective rather than adhering to rigid evaluative criteria (Sparkes and Smith 2009), the research team aimed to establish the trustworthiness of the data by emphasising key attributes of the research process. To achieve this, a subset of criteria deemed suitable for this type of research, as outlined by Tracy (2010), was applied. For example, the significance of the study was demonstrated through a rationale highlighting the relevance, timeliness, and importance of implementing the UEFA Consensus Guidelines on Nutrition in Elite Football. Methodological rigor was ensured by purposely sampling experienced sport nutritionists able to offer meaningful insights in relation to the study's objectives.

It is important to note that themes do not simply 'emerge' from the data but are actively constructed by researchers, shaped by their experiences, thoughts, and emotions. Consistent with contemporary approaches to enhancing the quality of qualitative research (e.g., Smith and McGannon 2017), the research team engaged with 'critical friends', challenging each other's interpretations and reflecting on alternative viewpoints. An initial draft of the findings was also shared with XX, who confirmed that the interpretations resonated with her practical experience as a practitioner and her role in data collection.

Findings

The aim of this study was to adopt a behavioural science approach to understanding the barriers and enablers experienced by sport nutritionists when implementing evidenced-based sport nutrition practices, as outlined by the UEFA Consensus Statement on Nutrition in Elite Football (Collins et al. 2021), with senior male football players in the English Premier League. Below, we describe the actions undertaken by sport nutritionists to implement these practices and present six key themes that encapsulate the challenges and opportunities to implementation, including six barriers and two enablers, which are mapped back to the COM-B and TDF domains in Figure 1.

Target behaviour: implementing evidence-based sport nutrition practice in the English Premier League

Sport nutritionists described primarily supporting the implementation of the UEFA Consensus Statement on Nutrition by providing food and supplements, such as meals and snacks at the club training ground, as well as pre- and post-match meals at hotels and stadia around competition. As a result, sport nutritionists often oversaw catering services, designing menus, and communicating regularly with chefs. Routine body composition assessments (e.g., DEXA scans, skinfolds measurements) were typically conducted weekly, fortnightly, or

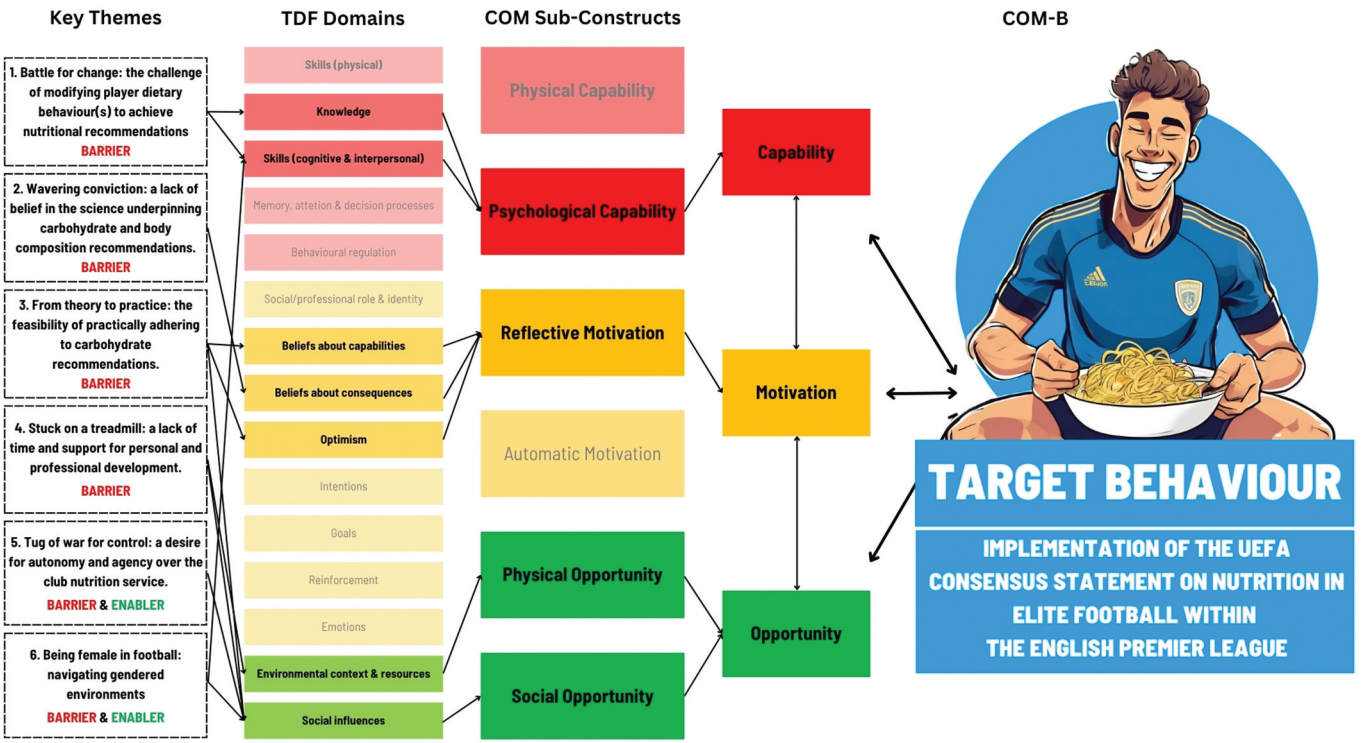

Figure 1. Key themes representing barriers and enablers to the implementation of evidence-based sports nutrition practice experienced by sport nutritionists working in the English Premier league, as outlined in the UEFA expert group Statement on Nutrition in elite football (Collins et al. 2021). These themes are mapped to the COM-B model (Michie et al. 2011) and theoretical domains framework (Cane et al. 2012). TDF, theoretical domains framework; COM, capability, opportunity, motivation; COM-B, capability, opportunity, motivation – behaviour model; UEFA, union of European football associations.

monthly. Some nutritionists noted that arbitrary body composition targets were set by managers, while others set individualised targets based on historical data and performance metrics. Nutritionists also developed tailored nutritional strategies and protocols for players, particularly for specific periods such as match day −1 and match day + 1, focusing on carbohydrate, hydration, and nutrient recommendations. Additionally, they provided education through workshops, infographics, and informal discussions on topics like carbohydrate requirements, alongside body composition or mass manipulation. However, many expressed a desire to offer more one-on-one support and education if provided the opportunity.

Key theme 1. Battle for change: the challenge of modifying player dietary behaviour(s) to achieve nutritional recommendations

COM-B behavioural diagnosis: *Psychological capability*

TDF domains: *Knowledge and psychological skills (cognitive and interpersonal)*

Sport nutritionists shared that player adherence to nutritional guidelines posed a significant barrier to implementing evidence-based sport nutrition practices. Specifically, they described what often felt like a battle between themselves and the players as they attempted to support players to modify their dietary behaviours. Despite spending considerable time planning and delivering the food and supplements to meet guidelines, nutritionists frequently encountered player resistance. For example, players were described as *'fussy eaters'* (Trevor), with one reason for this being their taste preferences, which impacted their dietary behaviours. Illustrating this point, Ellie shared:

> It's harder when they don't like it because these guys are a lot less inclined to give something a try if they don't like something, they won't do it, they just won't override that kind of, taste, to a certain extent.

In addition, many sport nutritionists described players' reluctance to adopt new dietary recommendations. As a result, the successful implementation of evidence-based sport nutrition practices often depended on *'actually changing player behaviour'* (Matthew). Ellie exemplified this by stating, *'I can make everything available, I can educate them on the best protocol, but, if they don't want to do it, nope, there's no budging'*. The influence of the players emotions was also acknowledged as a factor influencing their adherence to evidence-based practices. For instance, player motivation towards nutrition guidance was found to diminish if the club was not winning. As Vince explained, *' . . . if you're losing a lot of games, trying to implement things or ensure players are stringent and strict on the processes you've already implemented can be difficult, or it can be so much harder'*.

Key theme 2. Wavering conviction: a lack of belief in the science underpinning carbohydrate and body composition recommendations

COM-B behavioural diagnosis: *Reflective motivation*

TDF domains: *Belief about consequences*

A recurring theme was identified among sport nutritionists regarding the data underpinning the carbohydrate and body composition guidelines within the UEFA Expert Consensus Statement. Sport nutritionists expressed a concern that the carbohydrate recommendations were not based on research conducted with an elite football population. Fred exemplified this sentiment, stating:

> A lot of the time University athletes, recreational athletes [have been used in the research], they don't make a patch on these lads, like they get nowhere near the work rate, the intensity that they work at, and the pressures that they work under in a game situation.

Overall, many sport nutritionists voiced concerns about the insufficient research informing the carbohydrate recommendations for elite football players. Dave further highlighted this issue, stating:

> I don't necessarily feel that they [the carbohydrate recommendations] are as reflective as they could be, and that's only because the research just isn't there, in any great detail, or in any great depth, or any great quantity . . .

In addition to their doubts about the carbohydrate recommendations, many sport nutritionists felt that the body composition guidelines highlighted in the UEFA statement were supported by limited data. For example, Dave explained:

> Don't get me wrong, I know body composition is an important component, because if you're carrying a larger amount of fat mass than you know, but again, do we know enough about that? I often hear numbers thrown around, like I want them under 10%, but what's that based on?

Whilst sport nutritionists advocated for more research to better inform the carbohydrate and body composition guidelines, they also recognised the practical challenges of conducting research with elite football players. For instance, Matthew shared:

> It's just being able to do it [research in football] is very difficult, especially because the research we want to do

> in this area would be very intrusive. I can't see them being overly happy with us stabbing Premier League footballers and getting muscle biopsies.

Key theme 3. From theory to practice: the feasibility of practically adhering to carbohydrate recommendations

COM-B behavioural diagnosis: *Reflective motivation and social opportunity*

TDF domains: *Belief about capabilities, optimism, and social influences*

Many sport nutritionists expressed scepticism about the feasibility of practically achieving the carbohydrate recommendations of 6–8 g.kg.day^{-1}, noting that *'the guidelines are quite high even on match days'* (Ethan). Practitioners observed that players often struggle to consume *'that volume of food'* (Ellie) required to meet the recommendations. Fred elaborated, stating, '[I've] *never seen a player eat 8 grams* [per kg of body mass] *in the eight years that I've been doing the job. [. . .] it's not feasible, they're just not used to eating that volume of food or fluids'*.

Nutritionists were particularly concerned that adhering to the daily carbohydrate recommendations could lead players to *'feel quite heavy, have GI discomfort, and then poor sleep quality because they've ingested a lot of carbohydrates for dinner'* (Ethan). These issues were believed to '*ultimately have a knock-on impact on performance'* (Dave). Recognising these challenges, some nutritionists acknowledged adjusting their targets, aiming for *'five to six grams per kilo, and anything additional is a bonus'* (Matthew) or *'6 grams or 7 grams per kilo, and then a good little top up strategy on match day'* (Ethan).

Will pointed out that it can be *'tricky to actually meet guidelines with certain individuals'* and that challenges are compounded *'in certain clubs'*. Social influences also acted as barriers to implementing the carbohydrate recommendations, particularly when *'management or coaches are a little bit more old school'* (Ethan) and do not support high carbohydrate intake for players. These restrictions on what products can be provided highlight the 'tug of war for control' between fuelling practices and beliefs held by key stakeholders within clubs (key theme five). Will exemplified this challenge by stating, *'in the dressing room, there are certain supplements to help push for those guidelines a matchday, but again, it's like, are you allowed to use those supplements, which is a barrier for me'*.

Key theme 4. Stuck on a treadmill: a lack of time and support for personal and professional development

COM-B behavioural diagnosis: *Physical and social opportunity*

TDF domains: *Environmental context and resources and social influence*

Sport nutritionists repeatedly underscored the limited time and support they have for personal and professional development, with participants reporting working long hours typically *'60-hour weeks or 70-hour weeks on a double game week'* (Will). This was described as a barrier to implementing evidence-based practice *'because you don't have time to always catch up'* (Will). Many sport nutritionists expressed that it is *'extremely difficult to keep up to date with research'* (Matthew), *'get any time to attend conferences'* (Molly), or engage in reflective practice because *'you're just super busy'* (Hayley), *'keeping the players in line and the staff in line'* (Will). Additionally, sport nutritionists described the isolation they felt, as they were often the only nutritionists within the club environment. Some nutritionists described this as being a barrier to their personal and professional development as they felt unable to reach out and seek support from their colleagues. Matthew explained:

> As a nutritionist, you're very often one person in the club and you can feel very isolated, and very lonely, and very - like ugh, because you don't want to ask the other staff, "what do you think of this?" Because you're meant to be the expert, and so there's a bit of that, that goes on.

As a result, many sport nutritionists expressed an interest in collaborating and networking with other practitioners to share learning and optimise the implementation of evidence-based practice. However, the feasibility of meeting these needs was raised as there was concern that *'football is a very much, trade secrets kind of environment, and no one wants to share, this, that, and the other, which can be quite difficult*' (Molly).

Key theme 5. Tug of war for control: a desire for autonomy and agency over the club nutrition service

COM-B behavioural diagnosis: *Social opportunity*

TDF domains: *Social influences*

Many sport nutritionists expressed a desire for greater autonomy and agency in delivering the club nutrition services they provide, which was seen as both a barrier and enabler to the implementation of evidence-based sport nutrition practice. As an enabler, some nutritionists reported feeling trusted by colleagues and senior management to make beneficial changes within the club environment. For instance, Vince acknowledged, *'I'm very fortunate at [club]; the coaches, directors of football, [. . .], even the owner of the football club, completely trust*

you to do your job [. . .] without micromanaging or undermining you in any way.'. However, others described feeling constrained by senior leadership (e.g., the manager and head of performance) and were pressured to adopt behaviours that conflicted with their personal and professional values. For example, certain foods were often banned within the training environment by management staff, which undermined the professional practice of the sport nutritionist and disrupted the nutritionist–athlete relationship. Matthew illustrates this when he shared:

> I had management staff ban certain foods, like no sauces, no ketchup, no butter, no nothing. [. . .]. The players aren't ever going to go to the manager and question that, but they'll happily come and hammer me about it. "Why can't you get this? Why, why?" [. . .]. That can then impact your relationship with players and how much they listen to you. It just kind of undermines you little bit, because the player goes, well actually, you haven't really got much control here have you, you haven't really got much say over what's going on.

In addition to banning certain foods, some sport nutritionists described that management staff often imposed arbitrary body mass and composition targets on players. Although this approach conflicted with the preferred practices of the sport nutritionists, many felt powerless to influence management decisions. For Connor, this situation led a sense of inner conflict and discomfort, as he wished to uphold his personal and professional values, yet felt that his opinions were neither valued nor listened to by senior management:

> There are examples of where you essentially can't deliver evidence-based practice, like you know, it's quite difficult because it's almost like to what extent do you do things or not? So again, it comes back to the most conflicting thing of setting players body composition and weight targets, and despite whether you believe something or not, it's a difficult situation to be in when the person in charge essentially is adamant on one thing

Key theme 6. Being female in football: navigating gendered environments

COM-B behavioural diagnosis: *Social opportunity and psychological capability*

TDF domains: *Social influences and psychological skills (cognitive and interpersonal)*

The three female sport nutritionists highlighted the challenges they faced in a men's football environment, noting that it '*can be very difficult*' (Ellie) when trying to implement evidence-based practice. Given the underrepresentation of female sport and exercise practitioners within the literature (Patterson et al. 2022), it is crucial that we amplify their voices and shed light on their gendered experiences in this study. This is particularly important as one sport nutritionist expressed feeling unequal to her male counterparts, leading her to withhold her concerns to avoid exacerbating the gender disparities she experienced. Molly exemplifies this issue when she says:

> It's tough because [. . .] unfortunately, as a woman you're seen as lucky to work where you work. So, if you've got a concern or an issue, actually saying something can be difficult because you don't want to be seen as rocking the boat too much

Despite the challenges of being female in a predominantly male football environment, Molly went on to note that this could actually serve as an advantage in implementing evidence-based practice. She felt her ability to build effective relationships with players was key. For example, she shared:

> That was always something I pushed for [. . .] that if a player wanted to talk to me, it was me they were talking to, they weren't talking to an arm of [the club] or wherever, they were talking to me. And I think that was really important, so my communication and relationship building, I think is-probably my key strengths.

However, despite acknowledging the importance of the nutritionist–athlete relationship, female sport nutritionists found that their efforts to build relationships with players were often misinterpreted by males in the environment. For instance, when a female staff member established a strong professional rapport with a player, it was not uncommon for rumours of a sexual rather than professional nature to circulate. Ellie illustrated this gender disparity, stating:

> There's often a perception of females that have good relationships with players. There's always that strange undertone and assumption that there's something more than just being able to speak to [a male], and it's happened here in this department, I've heard them speak about females, like bullshitting rumours because that player gets on well with the woman who works in this department.

Discussion

Theoretically underpinned by the COM-B model and TDF, this study qualitatively examined the barriers and enablers experienced by sport nutritionists when implementing the UEFA Consensus Statement on Nutrition in the English Premier League. The behavioural diagnosis revealed six key themes, including six barriers and two enablers. First, *psychological capability* barriers were evident in the challenges nutritionists faced when attempting to modify player dietary behaviour(s). Second, *reflective motivation* was undermined by doubts about the scientific foundations of carbohydrate and body

composition recommendations in the guidelines specific to elite male English Premier League footballers. Third, *reflective motivation* and *social opportunity* were hindered by scepticism about the practicality of coaching players to realistically achieve carbohydrate intake targets. Fourth, *physical and social opportunity* constraints were apparent due to limited time and support for continued personal and professional practitioner development. Finally, practitioners expressed a desire for greater autonomy over the nutrition service, yet this was either facilitated or hindered by the *social opportunity* within the club environment. As an enabler, female practitioners' *psychological capability* enhanced implementation through strong interpersonal skills leading to an enabling nutritionist–athlete relationship. However, the female practitioners involved in this study shared experiences of working in elite male Premier League football clubs that highlight a gendered environment whereby female nutritionists are perceived differently to their male counterparts. Thus, the prevailing *social opportunity* of male football settings made implementation challenging. Taken together, these findings help to guide theory-driven interventions that improve the implementation of the UEFA Consensus Statement on Nutrition across the English Premier League.

Sport nutritionists in the English Premier League faced challenges in influencing players' dietary behaviour(s), primarily due to barriers related to *psychological capability*. These difficulties stemmed from applying their *knowledge* and *skills* across *cognitive and interpersonal* domains, impacting their ability to guide players towards optimal nutrition practices. Reflecting on our applied experience, the role of the sport nutritionist is inherently interpersonal and micro-political – requiring the ability to persuade players to adopt unfamiliar dietary practices (e.g., 8 $g \cdot kg^{-1} \cdot day^{-1}$ of carbohydrate, beta-alanine, or nitrate-rich foods), while also orchestrating input from chefs and other stakeholders to embed best practices into daily routines. However, as a profession, we often excel at identifying *what* players should eat but fall short in effectively coaching *how* to achieve these behaviours in practice (Morton 2024). This limitation is unsurprising given the field's historical focus on the physiological needs of elite male footballers (Anderson, Orme et al. 2017; Brinkmans et al. 2019; Collins et al. 2021), with limited attention to effective implementation strategies. A recent systematic review highlighted this gap, revealing that only three studies applied behavioural theory and only 19 out of 93 available behaviour change techniques were utilised in practice (Bentley et al. 2020). Addressing this challenge requires enhanced *training* and *education* to help practitioners design, implement, and evaluate effective behaviourally informed interventions, a critical step towards successfully implementing the UEFA Consensus Guidelines on Nutrition in elite football and advancing the impact of nutrition professionals in the industry.

Sport nutritionists emphasised the importance of autonomy and agency in delivering evidence-based nutrition services, identifying these as crucial for implementing the UEFA Consensus Statement, with *social opportunity* – shaped by professional networks – acting as both a barrier and enabler. Unfortunately, in elite male football, autonomy is often constrained by structural barriers and misconceptions perpetuated by influential actors in the system, such as coaches and performance staff, who may undervalue evidence-based nutrition practices (Bentley et al. 2019, 2021). Reflecting on our experiences, we have seen managers banning 'high-energy' foods, heads of performance enforcing generic body composition targets, and players subjected to damaging practices such as 'fat clubs' and punishment cardio sessions for failing to meet these targets. These practices not only undermine evidence-based recommendations but also erode trust, motivation, and the credibility of the sport nutritionist. Autonomy, a cornerstone of Self-Determination Theory (Deci and Ryan 1985), is directly linked to intrinsic motivation, professional fulfilment, and the delivery of high-quality work (Gagné and Deci 2005). Conversely, restrictive environments characterised by micromanagement and rigid structures reduce motivation, increase job dissatisfaction, and contribute to burnout (Warshawsky et al. 2013; Keith et al. 2021). Carter et al. (2023) highlighted that such environmental limitations significantly hinder the implementation of best practices, underscoring the need for greater trust, empowerment, and collaborative frameworks to enable nutritionists to operate effectively. By fostering autonomy within supportive environments that align with professional values, elite football can enhance the quality and impact of evidence-based nutrition practices.

A lack of belief in the benefits of implementing the UEFA Consensus Statement's carbohydrate and body composition recommendations, coupled with doubts about practitioner's ability to influence player adherence, was identified as a key barrier to implementing best practices. According to the COM-B model (Michie et al. 2011), behaviour change relies on Capability, Opportunity, and Motivation, with *reflective motivation* – shaped by *beliefs about consequences*, *belief about capabilities*, and *optimism* – playing a central role. When practitioners lack belief in the evidence-base or confidence in their ability to implement best practice, their

motivation to implement such guidelines diminishes (Cane et al. 2012). This challenge is amplified in socially complex environments like elite football, where rigid team cultures and influential actors may discourage practitioners from advocating for evidence-based strategies, such as increasing carbohydrate intake or addressing body composition practices. Bandura's self-efficacy theory (1997) suggests that low confidence in one's abilities significantly reduces the likelihood of initiating change. Low self-confidence in their ability to implement best practice guidelines may also contribute to a lack of belief in the evidence-base, leading practitioners to question the validity of the guidelines rather than engage in critical self-reflection on their own practitioner effectiveness. To counter these barriers, it is essential to strengthen nutritionists' belief in the scientific validity of the guidelines and enhance their coaching and communication skills to navigate challenging social dynamics, thereby better equipping them to effectively advocate for and implement evidence-based nutrition practices.

A lack of time and support for professional development has been identified as a barrier for sport nutritionists, stemming from *social influence* and *environmental context and resource* limitations that restrict their *social and physical opportunity* to implement evidence-based practices. In the UK, organisations typically invest around £3,000 per employee annually for CPD, offering an average of 3.5 training days (Institute for Fiscal Studies 2023). Without sufficient investment and support, nutritionists often manage mandatory reaccreditations and stay updated with advancements during their own time, which can negatively impact work–life balance and a long-term career in the profession. Continued professional development is crucial component of maintaining Sport and Exercise Nutrition Register status, enabling practitioners to retain their capacity to practise safely and effectively. As the field evolves, CPD ensures practitioners stay up to date with developing practice, such as coaching and behaviour change frameworks. Nutritionists with adequate CPD are also likely better equipped to collaborate within multidisciplinary teams, which is essential to comprehensive athlete care. Unfortunately, the lack of time and support for CPD likely highlights a broader issue within the industry, where sport nutrition practitioners are often employed on part-time or consultancy contracts, or as sole practitioners within clubs. This arrangement leaves no provision for cover during time off or annual leave, further restricting the already limited opportunities for self-development and professional growth. Addressing these barriers is critical for advancing the profession, safeguarding staff well-being, and implementing evidence-based practices that enhance player health, well-being, and performance.

Female sport nutritionists shared challenges and opportunities related to *social influences* and their *social opportunity* when implementing evidence-based practice in elite male football. Previous research has highlighted that such challenges are typically driven by sexism, gender-based discrimination, and inequality (including sexual harassment), with 82% women working in football having experienced discrimination at work (Women in Football 2023). This manifests in reduced credibility, stereotyping, and exclusion from informal professional networks, which limit a female practitioner's ability to fully integrate into team dynamics and assert their expertise (Norman 2010; Burton and LaVoi 2015). Additionally, societal expectations around 'appropriate' femininity can force women to balance being 'un-feminine' enough to be seen as credible while avoiding sexualised or gendered critiques (Fasting and Brackenridge 2009; Lewis et al. 2020). Despite these barriers, the female practitioners articulated their interpersonal skills in fostering enabling nutritionist–athlete relationships, with such skills being shown to foster inclusivity, improve team dynamics, and promote holistic well-being (Walker and Bopp 2010). Moreover, female practitioners have been found to contribute significantly to more diverse and effective sporting environments by challenging traditional gender norms (Drury et al. 2022; Cowan et al. 2024). This is important as gender norms can affect the impact that female nutritionists can have on the nutrition service in the club, and they can restrict the need for diversification of nutritionists working in elite male football.

Practical applications

This study provides practical insights for improving the implementation of the UEFA Consensus Statement on Nutrition in the English Premier League through a behavioural analysis grounded in the COM-B model and TDF. The BCW maps identified barriers and enablers to targeted interventions and policy recommendations, offering a structured, theory-driven approach to designing practical solutions, as demonstrated in Figure 2. When reviewing Figure 2, readers should note that it is not prescriptive but rather an invitation to interpret the example interventions in relation to their own contexts and experiences.

Reflecting on our own experiences of working in the English Premier League, we recognise how the findings align with common challenges we have faced as practitioners, including the difficulty of modifying players' dietary behaviours to meet recommendations, limited

Figure 2. Two behavioural interventions are provided per theme, guided by the Behaviour Change Wheel (BCW) and APEASE (Acceptability, Practicability, Effectiveness, affordability, side-effects, and Equity) criteria (Michie et al. 2011), and are proposed to enhance the implementation of evidence-based nutrition in the English Premier League. Policy delivery categories are highlighted in brackets. *CPD, continued professional development. SENR, Sport & Exercise Nutrition Register*. in Theme 3, we did not specifically address *Social Opportunity* because our primary focus was first on increasing sports nutritionists' knowledge and confidence. By strengthening their expertise, we aimed to empower them to communicate the importance of adhering to a high-carbohydrate diet to key stakeholders in their environment, facilitating a change in practice. In Theme 6, we did not explicitly address *Psychological Capability*, as it served as an enabler rather than a barrier. We hope this paper highlights the valuable skills that female practitioners bring to a diverse high-performance team.

time for personal and professional development, the desire for autonomy in delivering nutrition services, and navigating gendered environments within male football. By acknowledging our positionality, we critically explored these barriers through a reflexive lens (Braun and Clarke 2019). This approach strengthens the practical relevance of our findings and underscores the need for contextually grounded, co-designed interventions to help practitioners navigate structural and cultural constraints. The study's findings, and proposed example interventions in Figure 2, should now be reviewed by nutrition practitioners and line managers, alongside educational institutions and relevant governing bodies (e.g., the Sport and Exercise Nutrition Register), to ensure alignment with their unique contexts, thereby strengthening the implementation of best practices in the English Premier League and elite male football more broadly.

Strengths, limitations, and future directions

This study, guided by the COM-B model and TDF, offers valuable insights into the barriers and enablers faced by sport nutritionists when implementing the UEFA Consensus Guidelines in elite male football. Focusing on the English Premier League, it captures in-depth perspectives from practitioners operating at the highest level of male competition in the United Kingdom, and in doing so offers a stimulus for action. We recognise that the findings are not generalisable when viewed from the perspective of statistical-probabilistic generalisability (Sparkes and Smith 2013), nor is this a relevant or meaningful goal for qualitative research (Smith, 2018). Instead, we advocate for the concept of *generativity*–the ability of research to inspire new ways of seeing or acting upon a phenomenon (Barone and Eisner 2012). Accordingly, we invite readers to engage with the lived experiences of these sport nutritionists, reflecting on how these insights might resonate with or inform their own contexts.

We acknowledge the limitation of not collecting data on the employment status of practitioners (e.g., full-time or part-time status), which may influence the interpretation of findings, particularly regarding the time and resources available to implement evidence-based practices. Future research could extend these findings by including practitioners from other settings, such as elite female football, and by integrating perspectives from athletes and other key stakeholders – such as coaches, performance and medical leads, and head chefs – as highlighted by Carter et al. (2023). This broader approach will help to develop a multi-faceted understanding of the barriers and enablers to implementing evidence-based nutrition practices. Additionally, applying policy analysis frameworks (Houlihan 2005) could provide valuable insights into how organisational structures, stakeholder relationships, and resource availability shape the adoption of evidence-based practices in elite football.

Conclusion

To optimise the dietary behaviours of elite male footballers, this study qualitatively explored the barriers and enablers experienced by sport nutritionists in implementing the UEFA Consensus Statement on Nutrition within the English Premier League. Six key themes emerged, including six barriers and two enablers, spanning all three components of the COM-B model and seven domains of the TDF. Key challenges included difficulties in influencing player dietary behaviour(s), doubts regarding the scientific validity and practicality of carbohydrate and body composition recommendations, and limited time and support to develop professional practice. Nutritionists expressed a need for greater autonomy in delivering their roles, while female practitioners identified unique challenges and opportunities within the male football environment. These findings aim to inform evidence-based, behaviourally grounded interventions to improve the implementation of the UEFA Consensus Statement on Nutrition in the English Premier League.

Acknowledgements

The authors would like to thank all practitioners who completed interviews and/or acted as a gatekeeper.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This study was funded by Leeds Beckett University.

Author contributions

NC, SB, and MB conceptualised the study. Data were collected and analysed by SR and MB. Data interpretation and manuscript preparation was undertaken by NC, SR, MB, and SB. All authors approved the final version of the manuscript.

Patient and public involvement

Patients and/or the public were not involved in the design, conduct, reporting, of dissemination of this research.

Ethics approval and informed consent

This study involved human participants and was approved by the Local Ethics Committee, at Leeds Beckett University. Application reference: 90228.

Provenance and peer review

Not commissioned, externally peer reviewed.

Data availability statement

All data relevant to the study are included in the manuscript.
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