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Nutritional support in professional German football clubs and youth academies—a descriptive study

Supplementary Information

The online version of this article (<https://doi.org/10.1007/s12662-025-01019-y>) contains supplementary material, which is available to authorized users.

Introduction

Football (soccer) is a worldwide executed sport that continuously evolves, characterized by considerable increments of physical and technical requirements over the last years (Bradley, 2023; Stølen, Chamari, Castagna, & Wisløff, 2005). To cope with these increasing demands, nutrition can play a valuable role in optimizing the physical and mental performance of professional players, assisting them with good health maintenance, and reducing the risk of becoming ill or injured during the season (Collins et al., 2021). In preparation for match play and training, careful consideration of the composition, amount and timing of food and fluid intake is essential. Despite existing recommendations, research indicates that many professional male (Anderson et al., 2016; Brinkmans et al., 2019) and female (Morehen et al., 2021; Moss et al., 2020), as well as academy players (Braun, von Andrian-Werburg,

Schänzer, & Thevis, 2018; Stables et al., 2024) have suboptimal dietary intakes. A recent systematic review (Sánchez-Díaz, Yanci, Castillo, Scanlan, & Raya-González, 2020) showed that nutritional education could be an effective strategy to improve players' nutrition knowledge, eating habits, and body composition. Moreover, sports nutrition knowledge (SNK) is considered one of the key factors that influences nutrition behavior (Ono, Kennedy, Reeves, & Cronin, 2012) with athletes possessing greater nutritional knowledge more inclined to effectively implement this into their dietary habits (Carter, Lee, Ranchordas, & Cole, 2023; Janiczak, Devlin, Forsyth, & Trakman, 2022).

In practice, good communication between players, team nutritionists, and medical staff is essential to establish an optimal player-specific diet (Carter et al., 2023; Meyer, 2021; Wenger, 2021). The best guidance in making optimal food and fluid choices, to support and enhance players' performance, can be expected from experienced professionals educated to provide sports nutrition support to athletes and teams, namely sports nutritionists and dietitians (Thomas, Erdman, & Burke, 2016). Players typically prefer receiving nutrition information from their

club's dietitian or nutritionist through sport-specific nutritional guidance and individual consultations (Devlin & Belski, 2015; Trakman, Forsyth, Hoyer, & Belski, 2019). However, to provide recommendations for elite football players, nutrition support providers should have not only sufficient knowledge, formal qualifications, and experience in working with athletes, but also the skills to master the pressure and challenges of professional football and work as a part of a multidisciplinary support team (Meyer, 2021; Wenger, 2021).

Even though the importance of nutrition for football is strongly supported by recent publications (Collins et al., 2021; Meyer, 2021; Wenger, 2021), there is limited knowledge about recognition of sports nutrition as a significant and well-implemented topic within elite football clubs. Moreover, there is a lack of studies investigating potential differences in practical support provision between professional male and female teams. Opinions of practitioners, specifically football coaches, on nutrition topics, may offer valuable insight into the importance of nutrition within football but unfortunately, they are rarely found in the scientific literature and best-practice guidelines (Wenger, 2021). Some professional

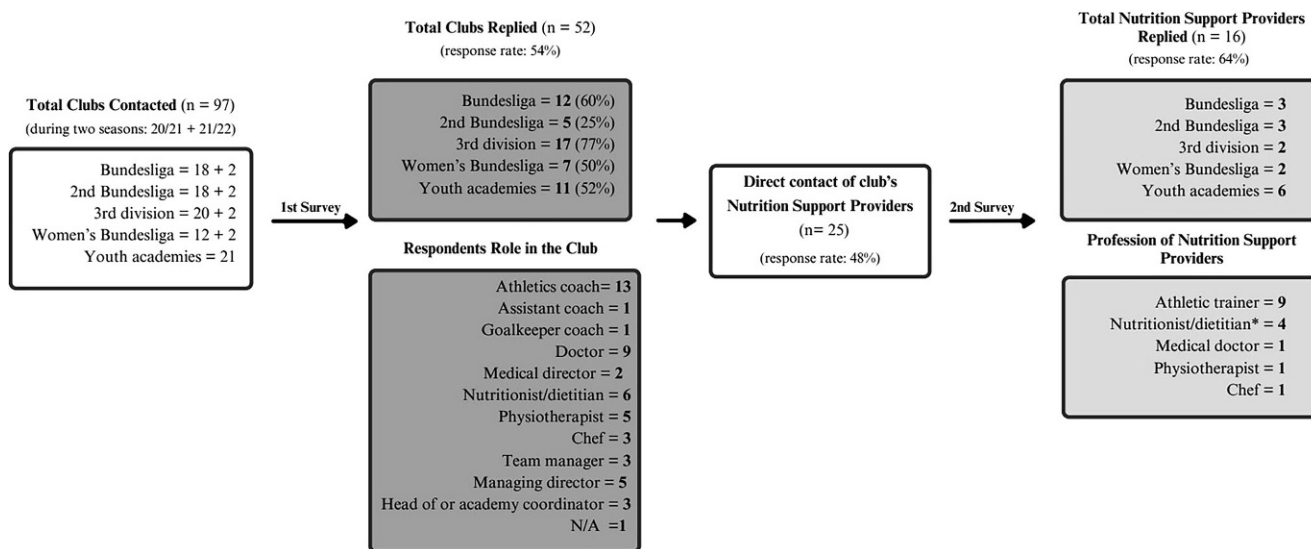


Fig. 1 ▲ Representation of data collection flow, including the number of clubs invited to participate, the number of responses collected and the respondent's role in the club. *Star* Three nutritionists/dietitians had a BSc or MSc degree and one a vocational (nonuniversity) training diploma

clubs employ full-time sports nutritionists, indicating the recognition of nutrition's importance within these clubs (e.g., Liverpool F. C.) (Liverpool FC, [n.d.](#)). In contrast, some other professional clubs do not provide nutrition support services to their players; however, the reasons for this remain unknown (McHaffie et al., 2022; Trakman et al., 2019). To our knowledge, no study so far has investigated the level of nutritional support within elite football clubs in Germany. Therefore, we conducted a survey study with the aim to (1) investigate the level of nutritional support currently provided in German football clubs, (2) examine the perceived importance and perceived effect of nutrition for performance within the clubs, and (3) explore the way nutritional support is provided among the clubs.

Materials and methods

Participants

In total, 97 professional male and female football clubs from the three highest German leagues (Bundesliga clubs, 2nd Bundesliga, 3rd division, and Women's Bundesliga) and their youth academies (■ Fig. 1) were contacted by e-mail, using professional and personal networks, and invited to participate in the study. Each

recipient received a short description of the study and a web link to the survey. To obtain access to the survey, informed consent was required to progress to the questions. The study was approved by the Ethics Committee of the Faculty for Human and Business Sciences of Saarland University (approval number: 21-04). Data collection lasted from May 2021 until March 2022.

Survey design

The survey was constructed using the Online Microsoft Forms (Microsoft, Redmond, WA, USA) tool and designed by the authors in conjunction with experts in sports nutrition, sports medicine, and athletic coaches working in professional football. Based on these experts' feedback, the survey was modified to improve its content, clarity, readability, and overall quality. The revised survey was then translated into German and piloted in a focus group of five participants, including nutrition experts and practitioners working in football. Among these participants, four were native German speakers who offered feedback, facilitating adjustments to the wording, language, and focus of the questions to ensure clarity and appropriateness. After minor modifications, the final survey (see supplementary material S1 and S2) comprised

two sections. The first part was intended for completion by a club representative who is either responsible for nutrition within the club or knowledgeable about the club's nutrition situation. It consisted of 33 questions distributed among five sections: (1) demographics and competitive level, (2) nutritional support provision, (3) support provider, (4) importance of nutritional support, and (5) use of tracking devices, with the first four sections presented in this paper. The second part of the survey was designated for the club's nutrition support provider and consisted of 43 questions distributed over two sections: (1) professional qualification and experience, and (2) type and frequency of nutritional support provision. The survey included several single- and multiple-response questions, rating scales and free-text questions. Quantitative responses were mainly gathered using five-point Likert scales to gauge the perceived level of importance, satisfaction, and usefulness of support. For all scales, points "1" and "5" were labelled with qualitative anchors (i.e., "not important", "not satisfied", or "no use" [1]; and "very important", "very satisfied", or "very useful" [5]). Additionally, a broader 10-point scale was used to indicate a perceived level of influence of nutrition on football performance (i.e., "very low" [1], and "very high" [10]). Where

D. Reyzis · H. Braun · T. Hauser · T. Meyer

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Abstract

Proper nutrition is considered important for the maintenance of health and performance in football players. The more demanding the match and training schedule, the higher the requirements for nutritional advice are. Still, the amount and level of nutritional support is unknown in many (semi-)professional settings. Therefore, the goal of this study was to provide an overview of nutrition practices in clubs of the highest German football leagues and their youth academies. An online survey about nutritional support was distributed to 97 professional male (Bundesliga, 2nd Bundesliga, and 3rd division), female (Women's Bundesliga), and academy club representatives of which 52 (54% response rate) replied. We found that ~83% ($n = 43$) of clubs provide some nutritional advice, mostly for the professional male (69%, $n = 35$) and academy teams (65%, $n = 34$), while only 32% ($n = 12$) of professional female teams receive support. Nutritional advice is primarily provided by either full-time coaches (27%) or external nutritionists (27%). In about 60% of elite German clubs, daily nutrition offers include one whole meal, sports foods and micronutrient supplementation. Clubs' representatives (75%) concur that nutrition significantly impacts football performance. Challenges in the implementation of advice are seen in professional players being often quite resistant to advice and in the topic still being "very coach-dependent". In conclusion, nutrition is regarded an important topic within surveyed clubs, but consistent support by nutrition professionals is sparse, especially for female players. To enhance the quality of nutritional support, professional clubs and academies might consider employing a full-time qualified nutritionist or dietitian.

Keywords

Sports nutrition · Nutritional support · European football · Elite soccer players · Professional athletes

elaboration was desired, this was ensured through the activation of an open-ended field enabling participants to explain or expand their responses. Within this study, the term *nutritional support* was defined as a method of provision of any dietary advice provided to a football team or individual players in the form of consultation, group talk, workshop, infographics, dietary plans, or another way of communication. For the question about the frequency of food and supplement provision within clubs, *sports foods and drinks* included gels, bars, electrolytes, isolated protein, or mixed macronutrient supplements; *micronutrients* included vitamins and minerals; and *allowed performance enhancers* included caffeine, creatine, β -alanine, dietary nitrate, sodium bicarbonate, and glycerol. The median response time to complete the survey was 6.1 min and 22.5 min for the first and the second part, respectively.

Survey analysis and statistics

Upon cessation of survey data uptake, raw data were exported to Microsoft Excel (Microsoft Corp., Redmond, WA, USA) and anonymized. Descriptive statistics were then used to display all responses. Responses indicated on Likert scales were treated at interval level. The perceived influence of nutrition on performance was compared among three groups based on the type of nutritional support received: [1] no support, [2] support provided by a nutrition professional, and [3] support provided by a nonnutrition professional. Differences between the groups were analyzed using the Kruskal–Wallis test for nonnormally distributed data at the 0.05 level for the alpha error. Open-ended responses and translations to English underwent multiple reviews by native speakers proficient in German to ensure the content's accuracy.

Results

Demographics and competitive level

In all, 52 clubs (response rate 54%) agreed to complete the online survey. The respondents were representatives of

the clubs (■ Fig. 1), with the majority having worked for their respective clubs for either 1–5 years ($n = 25$, 48%) or more than 5 years ($n = 22$, 42%) ($n = 4$ have been working for the club < 1 year, and $n = 1$ no answer). At the end of the first survey, respondents were asked to provide direct contact with the nutrition support provider in their club and consent to directly contact the provider. The club's nutrition support providers ($n = 25$) were then contacted by e-mail and asked to participate in the second part of the survey. The second online survey was filled in by $n = 16$ nutrition support providers (response rate 64%).

Nutritional support provision, professional qualification, and experience

Within the first survey, 43 respondents (~83%; equal to 44% of all contacted clubs) reported that nutritional support is provided in their club. However, 83% of respondents ($n = 43$) indicated that up to 30% of players seek additional individual nutritional support outside the club. The nutrition support providers (■ Fig. 2) were mostly football or athletic coaches (full-time employed) and nutritionists (characteristics described in ■ Table 1), and their support primarily focused on the professional male and academy teams, with less support given to professional female teams (■ Fig. 3). Furthermore, clubs which currently do not provide nutritional support to (all) players but interested in introducing (or expanding) it in the future ($n = 12$, 23%) agree that the main criteria for hiring a nutritionist in their club would be (1) competence and knowledge in nutrition (100%), followed by (2) good communication skills (67%), and (3) extensive experience in working with athletes (50%).

Importance of nutritional support

Clubs offering nutritional support ($n = 38$) rated (on 5-point Likert scale) the importance of nutritional support scales for their club with 4.1 ± 0.9 points, satisfaction with current support with 3.9 ± 1.0 points, and usefulness of introducing nutrition support services for players

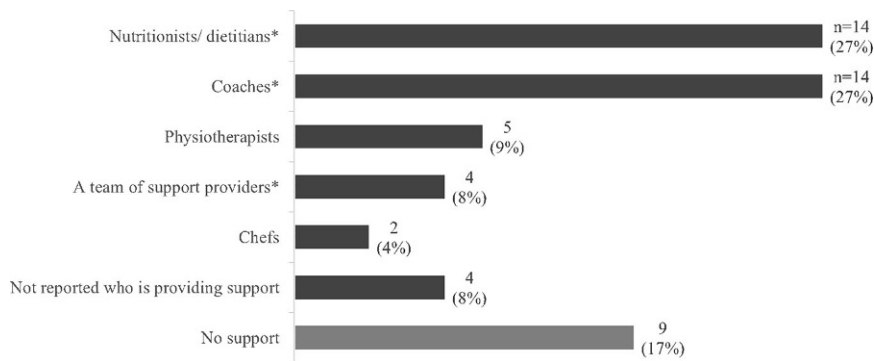


Fig. 2 ▲ Nutrition support providers in surveyed clubs (n = 52). *Note: Characteristics of “nutritionists/ dietitians” are described in [Table 1](#). “Coaches” category includes athletic coaches (n = 12), assistant coach with sport science degree (n = 1), and a football coach (n = 1). An example of “a team of support providers” in one club includes a chef, physiotherapist, and external nutritionist

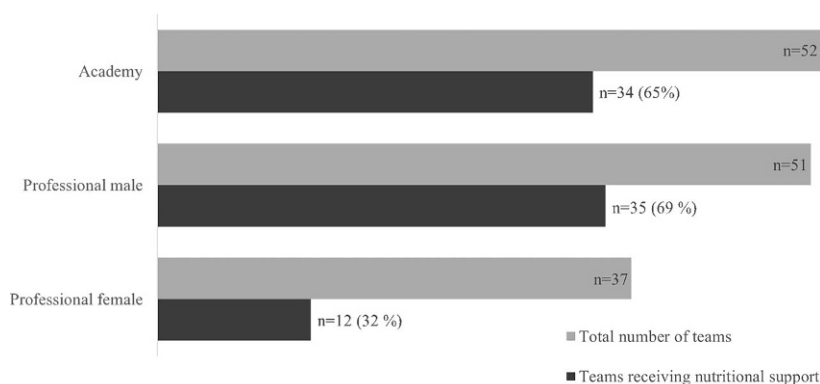


Fig. 3 ▲ Teams receiving nutritional support

and their match performance with 4.1 ± 0.7 points. The influence of nutrition on football performance was rated with 8.1 ± 1.6 points (on the scale of ten), with 75% (n = 39) of representatives assigning ≥ 8 points to its impact on the performance. Clubs (n = 9) which do not provide nutritional support consider that nutrition has high influence on performance (9.0 ± 1.2 points) similar to clubs where support is provided by a nutritionist or dietitian (n = 14; 8.1 ± 1.3 points) or by a member of staff who is not a nutrition professional (n = 29; 7.9 ± 1.8 points). The influence of nutrition on performance was not significantly different ($p = 0.2$) between the three groups. Furthermore, the survey revealed the importance of a multidisciplinary approach within elite football clubs. Almost all nutrition professionals (n = 15, 94%) reported they are collaborating with other team staff members, particularly with: (1) athletic trainers regarding weekly training load, weight, body composition

management, and nutritional education goals (n = 7, 47%); (2) medical team regarding players health status, blood profile, nutrient deficiencies, and supplementation (n = 7, 47%); (3) rehabilitation coaches or physiotherapists regarding the injury status and recovery process (n = 3, 20%); and (4) chefs and kitchen regarding the weekly menu plan and nutrient periodization (n = 2, 13%). A free-text section revealed current practices, potential improvements, challenges, and difficulties in implementing nutritional support in the clubs (full responses are provided in Supplementary Material S3).

Current practices and potential improvements

Physiotherapist/Athletic coach, Women's Bundesliga: 'Since the study addressed both, as a summary: In the men's sector: full-time chef professionals; in the Academy: full-time chef and cooperation with health insurance company; in the women's sector: covered by physios and

external service providers and in future via cooperation with health insurance company.'

Assistant coach, Youth Academy: 'We have a cooperation with a university and our contact person there for questions regarding nutrition. As part of this, we have jointly produced nutrition brochures and a recipe book. This survey relates to our NLZ (youth academy), I'm not the right person to talk to about the professionals. But the fact is that we still have room for improvement when it comes to looking after the players in terms of nutrition, and the conditions for effective improvement are not good (infrastructure, time management with school) ...'

Challenges

Nutritionist, Bundesliga: 'Implementation and development of structures, processes and know-how must be carried out carefully. The concept and organization chart must be developed and expanded step by step.'

Nutritionist, Bundesliga club: 'For the players, the influence of sports-appropriate nutrition on performance is not directly visible (measurable)—some of them are children and adolescents.'

Difficulties

Nutritionist, 2. Bundesliga club: 'It is difficult to introduce and implement long-term concepts (from youth to professionals), as the topic is unfortunately often still very coach-dependent in the professional sector. However, the club is working on making the topic of nutritional advice more and more independent of the coach.'

Nutritionist, Bundesliga club: 'Especially the 1st team—often every trend is followed (gluten-free, no dairy products ...) without checking the facts and scientific studies. Often resistant to advice. They are more concerned with taste and the team's requirements without looking at efficiency, e.g., pizza after the game or raw food before the game ...'

Athletic coach, 3rd division: 'With more resources (time + financial means, products), nutritional advice can markedly gain importance.'

Table 1 Characteristics of nutritionists ($n = 14$) working for the German elite clubs and youth academies

League	n (%)	Years working for the club (year(s))	n (%)	Education	n (%)	Contractual relationship with the club	n (%)
Bundesliga	7 (54)	< 1	1 (7)	BSc, MSc, or PhD degree in nutrition science or dietetics	10 (71)	External regular or irregular support (all in professional male and academy teams)	8 (57)
2nd Bundesliga	2 (15)	1–3	3 (21)	Vocational (non-University) education diploma	3 (23)	Full-time employed (in Bundesliga clubs only)	4 (29)
3rd division	3 (23)	3–5	9 (64)	Not reported	1 (7)	Part-time employed (both practitioners in 3. Liga clubs)	2 (14)
Women's Bundesliga	0	> 5	1 (7)	–	–	–	–
Youth Academics	2 (15)	–	–	–	–	–	–

Type and frequency of nutritional support provision

The second survey found that 14 professionals (88%) are providing team and individual support in the form of individual consulting, group talks, presentations, and meal planning during the season. Team support is offered seasonal in 12 clubs (75%), whereas individual support ($n = 14$) is, dependent on the league, accessible to players on seasonal ($n = 4$ Academies), monthly ($n = 2$ Women's Bundesliga clubs, $n = 1$ 3rd division club and $n = 1$ Academy), weekly ($n = 2$ Bundesliga, $n = 2$ 2nd Bundesliga and $n = 1$ 3rd division club), or daily basis ($n = 1$ Bundesliga club). However, professionals ($n = 14$, 88%) emphasized the need for more football-specific and position-specific nutrition guidelines to improve the implementation of nutritional advice in practice.

Food/supplements provision by the clubs

The second survey showed that at least one meal a day (breakfast, lunch, snack, dinner, or a meal to take-away) is offered by ten (Bundesliga $n = 3$, 2nd Bundesliga $n = 3$, Women's Bundesliga $n = 2$, and Academy $n = 2$) clubs (62.5%), while another six (3rd division $n = 2$, and Academy $n = 4$) clubs (37.5%) are offering meals on match and/or travel days only (usually a breakfast, snack, or a meal to take-away). Two or more meals per day are offered by three Bundesliga and three 2nd Bundesliga clubs (37.5%). Nine clubs (56%) are financially supported by the company that sells food or nutri-

tional supplements. All clubs ($n = 16$) are providing players with sports foods and drinks on some days/occasions, while 10 clubs (63%) are offering it daily. Micronutrients are provided by 13 clubs (81%; daily by 9 clubs [56%]), while allowed performance enhancers are given to players in 8 clubs (50%). Sports drinks and foods are recommended to the whole team by most professionals, while performance enhancers, vitamins (most often vitamin D), minerals, and omega-3 are recommended individually to players. All nutrition support providers reported that supplements are from a low-risk source, and three providers reported using batch-tested supplements only. The safety of supplements is checked on the Kölner Liste® ($n = 13$) or the Informed Sport website ($n = 4$).

Support provision in female vs. male professional teams

Nutritional support is offered in ten Bundesliga clubs (83% of $n = 12$ replied) and in six Women's Bundesliga clubs (86% of $n = 7$ replied). Male teams are supported by nutritionists ($n = 6$, 58%; from which three are full-time employed), chefs ($n = 2$, 17%), and athletic trainers ($n = 2$, 17%), while female teams are supported by physiotherapist ($n = 1$, 14%), physiotherapist or chef ($n = 1$, 14%), and athletic trainer ($n = 1$, 14%). Four female teams (57%) did not report who is nutrition support provider. Male players are offered more frequent (daily or weekly) individual support compared to female players (monthly support). Moreover, while female players receive daily snacks, main meals while travel-

ing, and take-away meals on match days, male players get two to three main meals daily plus an additional meal on a day before match or during travel.

Discussion

To the best of our knowledge, this is the first study assessing nutritional support provision in professional German football clubs and youth academies. Although club representatives concur that nutrition notably impacts football performance, there does not seem to be regular and consistent support provision by nutrition professionals.

Type of employment of nutrition support providers

Nutritional support for professional players in German clubs is provided mostly by football or athletic coaches and nutritionists. While coaches are usually full-time employed, nutritionists are providing mostly external regular or occasional support within the clubs. In contrast, a study of nutritionists in European and Brazilian elite football teams showed that 60% have full-time contracts with clubs (Abreu, Oliveira, Brito, & Teixeira, 2023). Similarly, in English football academies, 85% of category one academies ($n = 22$ of 26) employ accredited nutritionists, with 64% ($n = 14$) on a full-time basis (Carney et al., 2022). Additionally, nutritional support in 38% academies (with category 1–4 status; $n = 34$ of 89) is provided by members of the sports science and medicine department (Carney et al., 2022). The lower full-time employment rate in our study might be explained by

the fact that nutritional support in German clubs has been provided on average for the last 3.3 ± 1.5 years, compared with an average of 6 years (4.0–9.3 years) in the more recent study of Abreu et al. in other countries (2023).

Nutrition education and sports nutrition knowledge of nutrition support providers

Our study showed that 71% of the nutritionists employed/hired by German clubs have a BSc, MSc or PhD degree in nutrition science or dietetics, which seems to be below international standard, where 91% of nutritionists working with elite players have a university degree (Abreu et al., 2023). In contrast, our study showed that in some professional German clubs, nutrition support is provided by coaches, chefs, physiotherapists, and nutritionists without a formal degree. A lack of nutritionists and their replacement with other (nonqualified) members of the support team was seen a decade ago among professional male English leagues (Ono et al., 2012), and more recently among elite English female players (McHaffie et al., 2022) and youth academies (Carney et al., 2022). Even though our study did not examine the SNK of nutrition support providers working in the clubs, it is open to question whether specifically trained members of staff possess adequate knowledge to support professional football players. Two studies (Cockburn, Fortune, Briggs, & Rumbold, 2014; Zinn, Schofield, & Wall, 2006) found that coaches providing nutritional advice to team sports athletes have inadequate knowledge. Enhancing the understanding of nutrition by reading about sports nutrition issues seems to have no relevant impact on nutritional knowledge (Cockburn et al., 2014). Nevertheless, coaches who received formal nutrition education training demonstrated significantly better—albeit still inadequate—test results in comparison to their counterparts who did not undergo such training (Cockburn et al., 2014). The role of knowledgeable nutrition support providers is essential as they are in a position to positively influence players' eating behavior (Devlin, Leveritt,

Kingsley, & Belski, 2017; Thomas et al., 2016). However, to perform their duties effectively, sports nutritionists need sufficient time and resources (Carter et al., 2023). Our study shows that it is not uncommon for German players to seek nutritional support outside of their clubs. McHaffie et al. (2022) reported that due to a lack of on-site nutritionists, football players often look for nutritional advice elsewhere, frequently online. However, this online information is often not tailored to the specific needs of elite soccer players and can lead to misconceptions or misinformation. Moreover, almost 90% of nutrition support providers in our study are seeking better guidelines to help them implement and manage nutritional support in the clubs. To improve the quality of nutritional support, elite clubs and academies should consider hiring a qualified nutritionist or dietitian. Alternatively, they can invest in professional development and nutrition education training for staff members providing nutritional support within the club (Cockburn et al., 2014). Furthermore, leading football or sports nutrition institutions are encouraged to publish more practical and group-specific (e.g., youth players, female players, professional players) nutrition guidelines.

Importance of nutrition and challenges in support provision

In line with the UEFA statement (Collins et al., 2021), representatives of professional clubs and academies agree that nutrition has a substantial impact on football performance. Those clubs that have introduced nutritional support consider it an important service, as it benefits their players and enhances their match performance. In our study, individual nutritional support is provided weekly to most professional male teams, with only one club offering its players daily access to a nutrition support provider. In comparison, a recent study about supplementation in elite European football leagues and Brazil showed that 72% of nutrition professionals working in elite clubs support players daily, while 26% provide weekly support (Abreu et al., 2023). Moreover, the variety of respondents who replied

to our first survey shows that there is a lack of nutrition professionals in the clubs directly responsible for nutrition topics (including a survey on nutrition like the present one). Despite evidence of good practice with limited support, our respondents reported difficulties with the implementation of nutritional advice, such as limited finances and players being resistant to advice. In line with our findings, McHaffie et al. (2022) reported that financial constraints have led to a shortage of personnel in elite English women's football and inadequate food provision for players. Even though providing nutritional support in professional football is a challenging task (Wenger, 2021), continuous education of not only players, but also coaches, and support team members, along with creating a culture to promote good nutrition, is essential to address those challenges (Collins & Rollo, 2014). Aside from shaping the club's environment to “nudge” players to make better-informed decisions about nutrition, regular “face-to-face” contact with players is crucial to allow shaping and reinforcing nutritional behavior (Collins & Rollo, 2014).

Supplement- or food-first approach?

While over 80% of surveyed clubs occasionally provide sports foods and micronutrients to players, only less than 40% offer whole meals, which are available only on match or travel days. More frequent provision of sports foods and micronutrients over whole meals might be influenced by the difficulties associated with costs and practical challenges (e.g., food supply, preparation, and storage) which may deter the clubs from providing whole meals more frequently; however, the reasons were not surveyed by this study. While contemporary guidelines highlight the importance of a *food first* philosophy as being fundamental for both professional and young players (Collins et al., 2021; Hannon et al., 2021), specialized sports foods which provide a convenient source of nutrients can be a practical choice. Furthermore, elite football players often express a high demand for dietary supplements (Abreu et al., 2023).

The disparity between recommendations and practice could be lessened by providing further guidance on implementing the *food first* approach in practical terms. This should include strategies to effectively address financial and logistical challenges, with a particular emphasis on young and female players.

Sex-related support differences in professional teams

While the literature suggests a lack of sports nutrition research in female football players (de Sousa et al., 2022; Randell et al., 2021), our study suggests a lack of practical support given to professional female players when compared to their male counterparts. Even though a similar number of professional male and female clubs provide nutritional support to players, female teams seem to receive less frequent support from less professional members of staff. The limited practical support for female players may be associated with the lower popularity (and, thus, lower level of financing) of women's compared to men's football. However, during the last decade, interest in women's football has grown rapidly, leading to more professional training and competition conditions for female players (de Sousa et al., 2022). In line with the growing popularity, enhancing academic knowledge, and developing practical recommendations specific to female football players, there should ideally be a corresponding improvement in the effectiveness and regularity of nutritional support for female players.

Limitations of the study

Although this study gives a first insight about the level of nutritional support within elite football clubs in Germany, a main limitation of our study is a less-than-perfect response rate which allowed us to survey only about half of the contacted clubs, and the suggested goal of a 70–80% response rate in survey research was not reached (Kouvelioti & Vagenas, 2015). Furthermore, since no validated survey questionnaire assessing nutritional support in this specific population and covering all relevant points

was available, we created a new survey for this purpose and piloted it in a focus group only. Another limitation is the selection bias which may come from voluntary and, therefore, incomplete sampling (e.g., possibly only clubs interested in nutrition topics or already implementing some type of nutritional support, decided to reply to the survey).

Conclusion

A novelty statement

The findings indicate that while ~83% of respondents (equal to 44% of all clubs in German top three leagues and their academies) provide nutritional support to their players, a significant portion (17%) still do not provide such assistance. Furthermore, the survey reveals that coaches and nutritionists are the primary contributors to nutritional support in German top clubs.

A practical application statement

Professional male and female German football players, including those in academies, could benefit substantially from more frequent support from dedicated nutrition professionals, ideally with full-time or regular external employment. Alternatively, clubs can invest in professional development and education training for their staff providing nutritional support to ensure necessary expertise and skills to deliver effective and up-to-date nutritional guidance. Additionally, challenges in implementing nutritional advice could be addressed by publishing more practical, group-specific guidelines.

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Author Contribution. Conception and design of the study: Dolores Reyzi, Hans Braun, Thomas Hauser, and Tim Meyer. Data collection: Dolores Reyzi, Thomas Hauser, Tim Meyer. Interpretation of the data and manuscript drafting: Dolores Reyzi. Manuscript review and editing: Dolores Reyzi and Hans Braun. Supervision: Hans Braun, Thomas Hauser, Tim Meyer. Critically evaluated the manuscript and approved it for submission: All authors.

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Declarations

Conflict of interest. D. Reyzi, H. Braun and T. Hauser declare that they have no competing interests. T. Meyer is chairman of the medical committee of the German FA (DFB) and UEFA (European Football Confederation) as well as of the working group Medicine in Professional Football of the German League Organisation (DFL; Deutsche Fußball Liga).

The study was approved by the Ethics Committee of the Faculty for Human and Business Sciences of Saarland University (approval number: 21-04). All participants were informed about the study procedures and gave their consent to participate before accessing the survey questions.

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