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Talent identification and development strategies in elite women's soccer: a pan-European perspective

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ABSTRACT

The question of how best to identify and develop youth soccer players has received considerable attention from the scientific community. Existing literature has, however, largely focused on male players, with comparatively little exploration of the specific approaches employed within women's soccer. Accordingly, we sought to investigate the key factors deemed important by elite women's soccer clubs concerning the: 1) identification of potential talent; 2) development of players within the player pathway; and 3) selection of players for the next age group or senior team. Data were generated through semi-structured interviews with 11 key representatives from seven elite women's soccer clubs. Clubs were purposefully sampled to include the highest performing teams (38 domestic titles and 10 UEFA Women's Champions League titles) from five European nations (Spain, France, Sweden, Germany, and Italy). Data were analysed using thematic content analysis, resulting in six higher-order themes: 1) prioritising local talent; 2) recruitment from mixed grassroots leagues; 3) creating challenging developmental environments; 4) ensuring player wellbeing; 5) patience in decision-making; and 6) facilitating the youth-to-senior transition through a top-down approach. A total of 17 lower-order themes were subsequently identified. The present study offers novel insights of key strategies deemed important by some of the most successful women's clubs in top-performing European nations. Future research examining the efficacy of such approaches could help inform the development of evidence-based practices for nurturing the next generation of elite female players.

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Football; youth; recruitment; female; coaching


Introduction

In the evolving landscape of women's soccer, heightened public interest and financial investment have propelled the game towards greater professionalisation (Randell et al. 2021; Pope and Allison 2022). Notably, reflecting their vision of 'Making Football Truly Global', the Fédération Internationale de Football Association (FIFA) pledged a substantial investment of one billion USD towards advancing the women's game between 2020 and 2022 (FIFA 2020). This investment has coincided with a substantial rise in the number of female players becoming full-time professionals, with 62% of women's soccer leagues now being predominantly comprised of professional players (FIFA 2023). Consequently, this surge in investment and professionalisation has intensified competition among elite clubs, each striving to assemble winning teams capable of achieving both domestic and international success. Such success is vital to the financial sustainability and solvency of clubs and national federations alike (Philippou and Maguire 2022). Within the context of elite male soccer, on-field success is often pursued through the recruitment of established world-class players (Littlewood et al. 2011). Similar approaches have also become more prevalent in elite women's soccer with both the

number and value of transfers rising annually (Mourao 2022). However, given the associated costs, an increasing need exists for clubs to cultivate homegrown talents within their own academies and developmental pathways. The central goal of such academies is relatively straightforward: to develop high-performing senior professionals for the first team (Relvas et al. 2010). Achieving this objective, however, represents a complex and multifaceted process involving: 1) talent identification, the process of recognising players with the perceived potential to become elite players; 2) talent development, establishing optimal developmental environments conducive for realising each player's latent potential; and 3) talent selection, the on-going process of deciding which players should progress to the next age group or senior team (Williams et al. 2020). Given the competitive and financial benefits on offer, the matter of how best to identify, develop, and select youth soccer players is one of significant interest among both clubs and national federations (Balliauw et al. 2022).

Given the notable gap between the size of the initial talent pool and the number of players achieving elite status (Leyhr et al. 2020), existing literature has largely focused on delineating the multidisciplinary attributes that differentiate players

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who advance through a talent pathway from those who do not (Unnithan et al. 2012; Sarmiento et al. 2018). Recent data indicated that female youth soccer players who successfully transitioned between age groups were faster and more agile, possessed a greater high-intensity endurance capacity, and outperformed peers in technical assessments of dribbling ability and ball control in early adolescence (Höner et al. 2019; Datson et al. 2020). Similar attributes have shown efficacy in predicting the progression of female youth soccer players to senior football (Leyhr et al. 2020), with various anthropometric, psychological, and sociological variables demonstrating some predictive utility amongst male youth soccer players (Van Yperen 2009; Sieghartsleitner et al. 2019). While offering valuable insight into the multidisciplinary attributes crucial for elite success, insufficient attention has been given to the specific processes and strategies used across the various stages of talent identification, development, and selection. We must also acknowledge that talent development is a dynamic, non-linear process, shaped by numerous biological and environmental factors (Baker et al. 2019). A more nuanced understanding is thus necessary to grasp the intricate processes and strategies involved in nurturing youth players into elite professionals, considering the diverse settings and contexts in which these processes occur.

To understand how elite clubs approach talent identification and development decisions, there is a need to gain the perspective of key stakeholders such as coaches and sporting directors (Larkin and Reeves 2018). Recent studies have, therefore, increasingly turned towards qualitative lines of inquiry, shedding light on how recruitment decisions are made (Reeves and Roberts 2020), how clubs measure and track player development (Layton et al. 2023), and the criteria underpinning selection/deselection decisions (Fuhre et al. 2022). However, previous research has largely focused on male players, limiting application of those findings to the distinct developmental journeys and sociocultural nuances of youth female soccer (Gledhill and Harwood 2019). For example, disparities in resources, player pathways, and competition structures may necessitate distinct approaches to talent identification and development within men's and women's soccer (Archer and Prange 2019). Previous studies have also, largely, been geographically constrained, with much of the discourse being focused on individual nations such as England (Layton et al. 2023). Whilst valuable, these findings may not apply to other clubs and countries due to different sporting cultures, club philosophies, and playing styles (Ford et al. 2020; Reeves and Roberts 2020). A broad exploration of the talent identification and development strategies employed across women's soccer is therefore warranted. Examining such approaches through, for example, a pan-European perspective, could highlight important similarities and differences among clubs and nations. Furthermore, by examining the approaches of the highest performing and most accomplished clubs, researchers may extract important insight into the practices and approaches that are deemed to have contributed to their success.

Considering the aforementioned gaps within the literature, the present study embarked on a novel investigation of the talent identification and development strategies employed by some of the highest performing clubs within women's soccer.

Specifically, we sought to investigate the key factors deemed important by elite European clubs concerning the: 1) identification of potential talent; 2) development of players within the player pathway; and 3) selection of players for the next age group or senior team. In doing so, we provide valuable insight into the talent identification and development strategies employed by the most successful clubs from some of Europe's leading soccer nations.

Methods

Study design

This cross-sectional, qualitative study utilised semi-structured interviews to explore the talent identification and development strategies implemented within elite European women's soccer. The reporting of this study follows the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (Tong et al. 2007).

Participants and sampling

We explored the talent identification and development practices adopted within elite European women's soccer by purposively sampling the highest-performing clubs from prominent European nations. Accordingly, email invitations were extended to 13 clubs across Europe. A follow-up email was sent approximately two weeks after the initial contact if no response was received. In total, seven clubs from five nations (Spain, France, Sweden, Germany, and Italy) agreed to participate. All clubs were drawn from European nations within the top 15 of the FIFA World Rankings, with six clubs representing nations ranked within the top 10. All clubs had achieved recent domestic and/or European success (38 domestic titles and 10 UEFA Women's Champions League titles).

To gain comprehensive insight into the practices of each club, we recruited 11 key representatives (six females, five males) from the seven participating clubs. Participants held various full-time positions (head coach, $n = 3$; sporting director, $n = 4$; youth sporting director, $n = 4$) and had held their current or similar position for 7.8 ± 3.5 years (range: 3–13 years). All participants were recruited on the basis that they had extensive knowledge and experience of the talent identification and development practices employed at their respective clubs. Ethical approval was received from the University of Chichester Ethics Committee (REF: 2223–09), and informed consent was collected electronically from all participants before data collection commenced.

Semi-structured interviews

Data were collected through seven semi-structured interviews, conducted either individually ($n = 3$) or in dyads ($n = 4$) between February and July 2023. Dyads were from the same club and were conducted in instances where participants had knowledge and experience of different stages of the talent identification and development process (Morgan et al. 2013). Considering the geographical spread of participants, interviews were conducted virtually using video conferencing software

(Microsoft Teams, United States). Interviews were facilitated by a male researcher (GM), experienced in qualitative research methods and without prior connections to participants.

Interviews followed a semi-structured format and were guided by an interview schedule (Supplementary File 1) developed and revised by the research team who possessed extensive applied and research experience in elite female and male soccer. The interview schedule comprised open-ended and non-leading questions aimed at exploring each club's approach to talent identification and development. To refine the schedule, a pilot interview was conducted with the head coach of a Scottish Women's Premier League club, leading to the reordering ($n = 1$), rewording ($n = 2$), and removal ($n = 2$) of certain questions (Smith and Sparkes 2016). These amendments were made to enhance the clarity of the interview questions and ensure the relevance of the schedule to the overarching research questions. This pilot interview also allowed the interviewer to practice and refine their interviewing technique. Approximately one week before each interview, participants received a copy of the interview schedule and were encouraged to review the questions and make notes to assist in addressing the interview prompts (Kazmer and Xie 2008). To overcome potential language barriers, participants received a translated version in their native language. Initial translations were generated using Google Translate (Google Translate, United States) before being reviewed and corrected by associates of the research team who were fluent speakers of the relevant language.

Interviews commenced with a brief preamble, reminding participants of the research's rationale, its voluntary nature, and of considerations concerning confidentiality and anonymity. To encourage an open dialogue and mitigate against social desirability bias, participants were assured that there were no right or wrong answers. Several 'ice-breakers' were then used to establish rapport and engage participants in the discussion (e.g., Could you please tell me a little about the role you play at your club?) (Smith and Sparkes 2016). The interviews then focused on three key aspects of the talent identification and development process (Williams et al. 2020, 1) talent identification, examining the factors deemed important in identifying potential talent; 2) talent development, exploring strategies considered effective in preparing players for senior soccer; and 3) talent selection, examining the factors considered when promoting players to the next age groups or senior team. Probes or curiosity-driven questions were used to seek further elaboration or clarification where necessary (Patton 2002). Before concluding interviews, participants were encouraged to share any pertinent information not yet discussed. With participants' consent, interviews were digitally recorded and lasted 86 ± 14 mins (range: 61–101 mins).

Data analyses

Interview data were analysed through thematic content analysis (Smith and Sparkes 2016). Analysis followed a six-step process (Braun and Clarke 2006): 1) familiarisation; 2) initial coding; 3) generating themes; 4) reviewing themes; 5) defining themes; and 6) reporting. Firstly, audio files were transcribed verbatim, resulting in 240 double-spaced pages. Transcripts

were subsequently double checked for accuracy. To establish a thorough understanding of the content and ensure familiarity with the data, interview transcripts were carefully read and re-read. Themes were then generated through line-by-line analysis, with quotations assigned to categories of higher generality. Raw data units were then formed from participants' words and grouped into lower-order themes and then higher-order themes. This initial coding was data-driven in that lower-order themes were generated from the data itself. Deductive reasoning was subsequently employed to relate these back to the original research questions, with this analysis being based upon three *a priori* research topics (talent identification, development, and selection). During analysis, internal homogeneity (that data within a category share clear characteristics) and external heterogeneity (that clear differences exist between different categories) was sought (Patton 2002). This was achieved through constructive debate between the first, second, and last authors whereby we observed Patton's (2002) 'dual criteria for judging categories' to discuss and confirm the allocation of raw data units to specific categories.

Findings and discussion

Encompassing the three overarching topics of talent identification, development, and selection, thematic analysis of the data highlighted six higher-order themes: 1) prioritising local talent; 2) recruitment from mixed grassroots leagues; 3) creating challenging developmental environments; 4) ensuring player wellbeing; 5) patience in decision-making; and 6) facilitating the youth-to-senior transition through a top-down approach. A total of seventeen lower-order themes were subsequently identified (Figure 1). Our findings and discussion have been integrated in the following section to provide a rich and detailed discussion of the higher- and lower-order themes, contextualising these in relation to the extant literature.

Talent identification

The initial phase of talent identification typically lies within the domain of talent scouts and recruitment personnel who survey grassroots soccer leagues and relay insights on potential players back to their respective clubs (Reeves et al. 2018). Given soccer's global reach and the rewards of discovering potentially world-class players, clubs compete to recruit top-tier national and international talent into their academies (Botelho and Agergaard 2011). However, in the context of the present study, all clubs ($n = 7$) revealed that they prioritised the identification of local talent (Theme 1), before expanding their search geographically at older age groups. This approach reflected the heightened competition encountered when scouting further afield, prompting clubs to prioritise local regions where there was perceived to be a sufficiently large talent pool (Theme 1A). The decision to prioritise local players was also underpinned by the financial and logistical challenges encountered when relocating youth players (e.g., accommodation, schooling, and family relocation) (Theme 1B). Readers should indeed be cognisant that whilst revenues and levels of investment in women's soccer have increased within recent

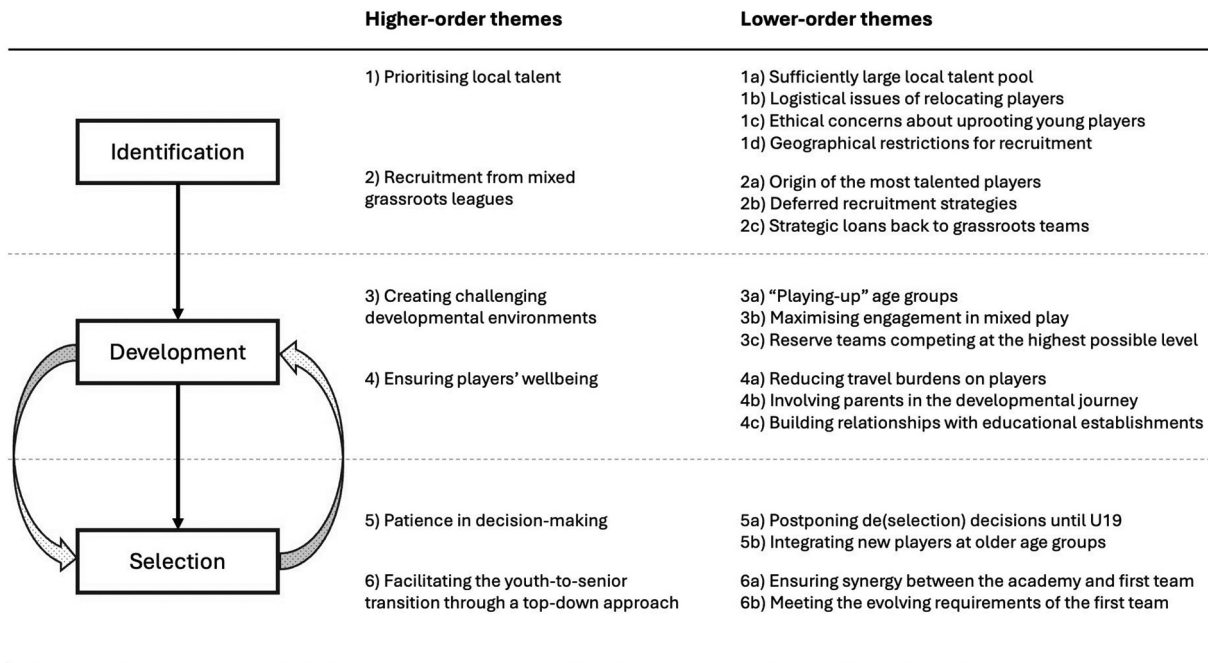


Figure 1. Higher and lower order themes of key factors considered important in the identification, development, and selection of youth female soccer players. Adapted from Williams, Drust and Ford (2020).

years, substantial disparities persist when compared to men's soccer. Thus, our findings that elite women's clubs focus primarily on regional and national talent may be influenced by a myriad of factors, including lesser established scouting networks and a constrained financial capacity to recruit internationally.

Our data also revealed that the focus on local players was underpinned by ethical concerns, with several clubs from France ($n = 2$), Sweden ($n = 1$), Germany ($n = 1$), and Spain ($n = 1$) expressing reservations about uprooting and disrupting the lives of young players (Theme 1C). Previous research has highlighted the psychological and social challenges that international migration can pose to youth soccer players' wellbeing (Richardson et al. 2012). For instance, recent findings among elite Japanese female soccer players highlighted challenges during cultural transitions, including feelings of homesickness, loneliness, and social isolation (Hirose and Meijen 2022). A broader issue also arises regarding the recruitment of international youth players, with concerns that an influx of foreign talent could limit opportunities for local players within academies and first teams (Richardson et al. 2012). An alternative perspective has, however, been posited, suggesting that the recruitment of foreign players may instead augment the development prospects of local players (Elliott and Weedon 2010). The recruitment strategies of elite clubs are, therefore, likely to be of considerable interest to national federations whose own success is reliant on the development of domestic talent.

Notwithstanding the financial, logistical, and ethical challenges of recruiting internationally, all clubs ($n = 7$) noted that their decision to focus on local players was largely driven by the geographical restrictions imposed by FIFA and their respective federations concerning the recruitment of youth players of different ages (Theme 1D). Reflecting these regulations, all

clubs ($n = 7$) focused on recruiting players from their local region until U14, with clubs from Sweden ($n = 1$), Germany ($n = 1$), Spain ($n = 1$), and Italy ($n = 1$) then expanding their search nationwide until U16. Clubs from France ($n = 3$) did, however, continue to focus on recruiting from their local region until U16. As per FIFA regulations, all clubs ($n = 7$) could then recruit from the European Union (EU) or European Economic Area (EEA) between the age of 16 and 18 years, before expanding their search worldwide beyond 18 years of age. Thus, in considering existing legislation and the costs/benefits of national/international recruitment, international scouting was reserved almost exclusively for the first team.

In response to concerns regarding player development and playing opportunities for indigenous players, UEFA introduced the 'homegrown player rule' at the beginning of the 2005/06 season. This regulation currently requires elite European women's soccer clubs to have a minimum of six players who have been developed by their club (or another club in the same national association) for at least three years between the ages of 15 and 21 (Union of European Football Associations, 2024). To maintain squad competitiveness whilst adhering to existing legislation, elite men's clubs often recruit international players from as early as age 16 (Littlewood et al. 2011). It is therefore interesting that international recruitment was only considered for the first teams of the clubs in the present study. Although the composition of the participating clubs' academies was not explored, Spain and Germany have recently been reported to have the highest percentage of indigenous players among major European women's leagues (CIES Football Observatory 2024). Our findings also align with recent evidence on youth player migration patterns, suggesting that Spain and France import fewer international players compared to other major nations (European Club Association, 2023). While speculative,

there are perhaps cultural and philosophical considerations encouraging clubs to focus more on identifying and developing local talent (Ford et al. 2020).

To discover promising female players not yet affiliated with academies, clubs often turn to grassroots leagues. In girls' soccer, these leagues typically operate in two formats: girls-only leagues or mixed leagues where girls compete alongside boys. In the context of the present study, all clubs ($n = 7$) emphasised the significance of mixed grassroots leagues during the talent identification process (Theme 2), with these leagues unanimously regarded as being the origin of the most talented female players (Theme 2A). Scouting efforts were therefore largely focused on these leagues, with two clubs from France ($n = 1$) and Germany ($n = 1$) adding that they actively collaborated with scouts from boys' academies to identify promising female players. However, reflecting the perceived developmental benefits of playing alongside boys, all clubs ($n = 7$) highlighted their preference for allowing talented female players to continue in mixed grassroots leagues for 'as long as possible'. Various strategies were therefore adopted to extend the involvement of talented female players within mixed grassroots leagues, with clubs intentionally delaying their recruitment into their academies (Theme 2B). This was facilitated in part by the structures of the academies and player pathways, with most clubs ($n = 5$) commencing their female pathways at later age groups, typically ranging from U14 to U19 (Figure 2). The rationale behind this was that by starting the academy pathways at older ages, talented female soccer players could continue participating in mixed soccer until the maximum age permitted, thus ensuring they experienced the perceived developmental benefits of mixed play for as long as possible. The age at which girls could participate in mixed grassroots leagues varied between nations. In Spain, France, and Sweden, girls could participate in mixed football until age

14, whereas Italy and Germany had slightly older thresholds, allowing participation until 15 and 16 years, respectively.

Regarding the two clubs from France ($n = 1$) and Spain ($n = 1$) who initiated their academy pathways from as early as U6 (Figure 2), alternative strategies were employed to extend the participation of talented female soccer players in mixed play. Specific measures were, however, taken to mitigate the risk of these players being signed first by rival clubs. One Spanish club revealed that they sometimes recruited the player and immediately loaned them back to their original grassroots team (Theme 2C), allowing the player to remain in mixed play until they were no longer eligible. A French club, on the other hand, focused on developing strong relationships with the player and their family, maintaining regular contact, and extending training invitations during vacations. It is indeed common for scouts, acting as the club's representatives, to maintain communication with players and their families during and after trial periods (Reeves et al. 2018). However, in interpreting the current findings, we must acknowledge that each of the interviewed clubs were among the most successful in their nation, boasting highly productive academies. Consequently, when players receive offers from multiple clubs, those with the 'big name' lure often look more attractive. While lower category clubs may emphasise developmental benefits such as greater playing time, smaller clubs with limited influence and direct rivals in the same region may find it challenging to implement strategies comparable to those reported in the present study.

Talent development

All clubs ($n = 7$) unanimously emphasised the importance of creating optimal developmental environments, advocating exposure to challenging training and match settings (Theme 3). Research indicates that accumulating more hours

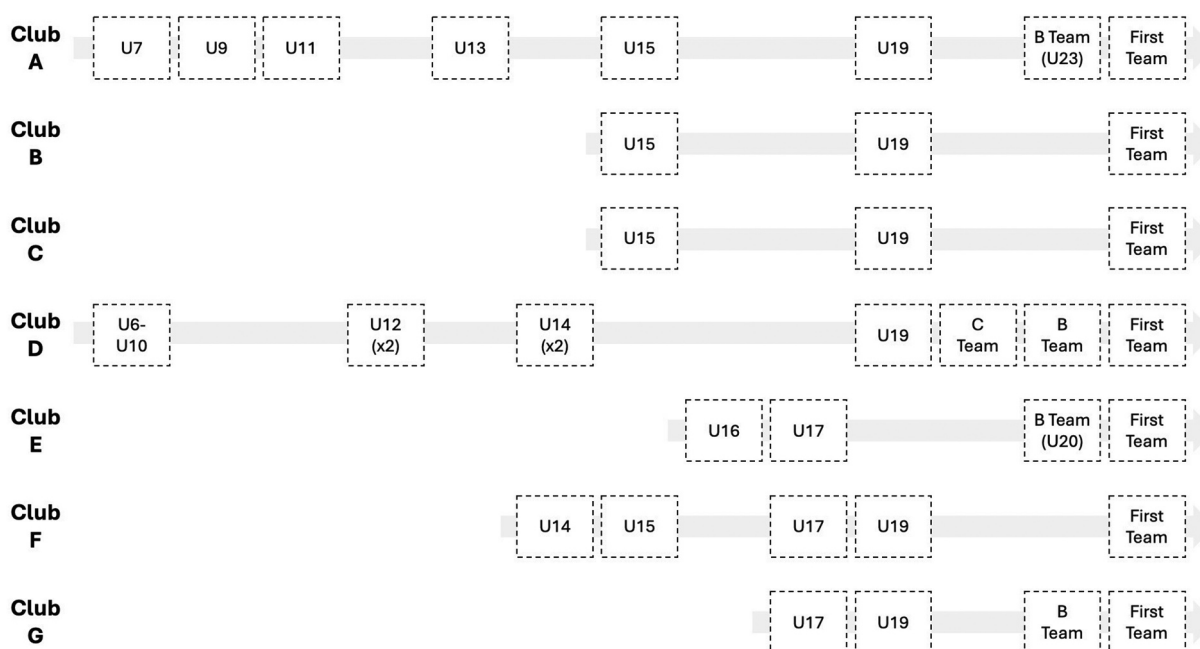


Figure 2. Academy structures and player pathways of each of the participating clubs.

in moderately to highly challenging soccer training distinguishes between national and varsity-level female players (Hendry et al. 2019). One common approach utilised by all clubs to achieve this was 'playing up', wherein talented players train and compete with older peers (Malina et al. 2019) (Theme 3A). This approach aims to expose players to appropriate challenge levels, potentially resulting in positive developmental outcomes (Malina et al. 2019). However, despite the potential benefits, several clubs from Spain ($n = 1$), France ($n = 1$), Sweden ($n = 1$), and Italy ($n = 1$) cautioned against exposing young players to such environments too early due to potential undesired psychosocial consequences. Recent investigations into athlete perceptions of playing up in youth soccer highlight that differences in size and skill may lower the confidence of younger players (Goldman et al. 2022). It was also suggested that younger players may struggle to fit in socially with older peers (Goldman et al. 2022). Well-developed psychological and social skills are therefore crucial if players are to successfully transition to older age groups (Kelly et al. 2021). This notwithstanding, we must recognise that in instances where a player is at a more advanced stage of biological and psychological development, 'playing up' could equally result in favourable improvements in psychosocial skills (Reeves et al. 2018). It is, therefore, essential that key stakeholders consider these holistic factors when contemplating advancing youth soccer players to older age groups.

Mixed play, wherein girls compete alongside boys, was unanimously perceived as offering players the most appropriate developmental environment. All clubs ($n = 7$) therefore actively sought to maximise their players' engagement in mixed play (Theme 3B). A common strategy among clubs was to enrol their younger age groups in mixed leagues whenever possible, with these leagues considered as being more physically and technically demanding, necessitating quicker decision-making on the ball. One French club was also found to adopt a mixed-training model, grouping players based on playing level rather than sex until U14. These practices underscored participants' beliefs that exposure to such conditions could help youth female players develop the physical and technical qualities essential for the modern game. Given the increasing demands of women's soccer (Randell et al. 2021), participants signposted the particular importance of being able to perform under pressure and solve problems on the pitch.

Our findings align with trends within other European nations, such as England, where Emerging Talent Centres (ETCs) have been established to enable girls to join boys in mixed football environments (England 2023). However, whilst the premise of exposing players to diverse playing formats and experiences is perhaps a sound one, it underscores the need for a more nuanced discussion surrounding talent development and player pathways within the context of youth female soccer. Although existing research supports the benefits of creating challenging developmental environments (Hendry et al. 2019), little evidence currently exists concerning the efficacy of mixed play within youth soccer. Meanwhile, with mixed leagues being perceived as providing more competitive environments, it raises questions about how to enhance the quality of girls-only leagues to offer similar challenges and opportunities for growth. Given the diverse and varied pathways in youth female

soccer, additional research is necessary to determine which playing and training formats best facilitate development. Such work would have important practical and theoretical implications for the enhancement of player pathways within women's soccer.

Reserve teams were considered vital in facilitating the transition of youth players to senior team football. Reserve teams are commonly regarded as the final stepping stone to first team football, with clubs striving to create environments that closely mirror the first team setup (Mannix et al. 2023). However, concerns exist regarding the cultural and physical gaps between academy and first team environments. For instance, while significant differences exist in the physical and technical demands between age groups, the demands of first and second division senior soccer are more closely aligned (Harkness-Armstrong et al. 2022). Therefore, if the goal of reserve teams is to prepare players for senior team challenges, it seems logical that they compete at a level closely resembling that of the first team. Our findings underscored this perspective, with all clubs ($n = 7$) emphasising the importance of their reserve teams competing at the highest possible level (Theme 3C). Accordingly, three of the interviewed clubs from Spain ($n = 1$), Germany ($n = 1$), and Sweden ($n = 1$) had reserve teams competing in the second tier of their national league systems. The ability to compete at this level was, however, contingent upon national regulations and academy structures. The French Football Federation, for example, stipulate that at least two divisions separate first teams from their reserves, limiting opportunities for clubs to compete in the second tier. Meanwhile, reflecting their academy structures, some clubs from France ($n = 2$) and Italy ($n = 1$) enrolled their reserve teams in U19 leagues. Thus, in acknowledging the crucial role that reserve teams play during the youth-to-senior transition, careful consideration should be paid by both clubs and national federations regarding the structure of their academies and competitive pathways.

While striving to produce players for the first team, all clubs ($n = 7$) stressed that talent identification and development decisions must be made in the context of one overarching priority: ensuring each player's welfare and holistic development (Theme 4). The youth-to-senior transition is inherently competitive and challenging in nature, placing a considerable psychological burden on young players (Mannix et al. 2023). Consequently, dropout rates are high among youth female soccer players (Gredin et al. 2022). It is, therefore, incumbent on key stakeholders to ensure that the development of players does not occur at the expense of their wellbeing. To achieve this, all clubs stressed the importance of minimising travel burdens to and from training (Theme 4A), with clubs from France ($n = 3$) and Germany ($n = 1$) imposing maximum travel distances between the academy and the players' homes. It was also considered particularly important to involve parents in the developmental journey (Theme 4B), with clubs from France ($n = 1$), Spain ($n = 1$), and Germany ($n = 1$) facilitating consistent communication between coaches and parents, organising annual parent events, and welcoming parents to observe training first hand. While parental support plays a critical role in youth development (Murray et al. 2020), parents and carers have often been overlooked in the talent development process

(Martindale et al. 2023). Reflecting the detrimental impact that inconsistent and contradictory feedback from coaches and parents can have on developmental outcomes (Taylor et al. 2021), clubs from France ($n = 1$) and Germany ($n = 1$) sought regular consultations with parents/carers to define expectations of each party and to ensure that they agreed for all key decisions.

Clubs also sought to cultivate supportive environments by nurturing good relationships with educational establishments (Theme 4C). The requirement to balance school and soccer is indeed a prominent source of stress for youth soccer players (Solhaug et al. 2021). Parents of youth athletes have therefore signposted the enhancement of communication with educational institutes as a key aspect of talent development environments warranting improvement (Martindale et al. 2023). In the context of the present study, several nations (France, Spain, and Germany) were found to have dedicated 'sport schools' whereby students were afforded enhanced support and flexibility to balance their soccer commitments. In considering the relatively low number of players that successfully transition into elite senior professionals (Gulich 2014), it is incumbent on clubs not only to develop talented soccer players, but to develop well-rounded individuals that are equipped for a life beyond sport (Stambulova et al. 2021).

Talent selection

Recognising the diverse developmental paths of individual players (Helsen et al. 2012), all clubs ($n = 7$) stressed the importance of exercising patience with those already within the pathway (Theme 5), citing the particular importance of biological maturity. Consequently, once players entered the developmental pathway, three clubs from France ($n = 1$), Spain ($n = 1$), and Italy ($n = 1$) advocated for prolonging their retention within the system, postponing initial deselection decisions until U19 (Theme 5A). Interestingly, this approach differs from that typically observed in youth male soccer, wherein only 7% of players progress from U10 to U19 (Gulich 2014). The emphasis, therefore, appears to be placed on talent development within elite female soccer, with talent identification and selection taking precedence in elite male soccer. While speculative, potential discrepancies may stem from the differing landscapes of male and female youth soccer, with the former containing a significantly larger talent pool (Ford et al. 2020). Another contributing factor could be the often later start in the academy for female players (Figure 2), allowing for a more settled maturational status before talent identification and selection begins. This contrasts with the male academy system, where early identification and selection are prioritised, potentially leading to higher dropout rates as players mature and develop at different rates. Differences in academy entry ages and maturational considerations may therefore necessitate different approaches to talent identification and development in male and female soccer.

While the exact number of players progressing between age groups within the participating clubs remains unclear, talent development environments emphasising long-term growth are linked to enhanced player wellbeing (Ivarsson et al. 2015). Notably, concerns about deselection represent a significant

source of stress among elite female soccer players (Gredin et al. 2022). Delaying deselection decisions until later age groups is also beneficial as it acknowledges the non-linear nature of development and the challenge of accurately predicting future potential. However, forecasting performance potential at a young age is complex, given the multifactorial nature of success in top-level soccer (Sarmiento et al. 2018). Clubs in the present study revealed that they are also receptive to integrating new talent into their academies at older age groups (Theme 5B). This does, however, prompt a broader question regarding the optimal structure of soccer academies and brings into focus the merits of early vs. delayed selection.

To ensure the smooth transition of players to the first team, four clubs emphasised the necessity for a top-down approach to the talent identification, development, and selection process (Theme 6). Synergy between the academy and first team was considered crucial, with clubs from France ($n = 2$), Spain ($n = 1$), and Sweden ($n = 1$) endorsing active engagement between the head coach and academy staff to establish a shared vision and direction (Theme 6A). Previous studies underline the significance of establishing synergy between the academy and first team to optimise the transition rates of youth players to senior teams (Relvas et al. 2010). In the present study, these clubs revealed that meetings at the onset of each season facilitated communication, with the head coach outlining the desired player profile for the first team. Previous research has indeed suggested talent identification decisions are underpinned by factors such as club philosophy and the recruiter's relationship with the head coach (Reeves et al. 2019). Talent identification and selection decisions may also be underpinned by the playing needs of the coach and the team (Larkin et al. 2023). Clubs in the present study confirmed this, stressing the importance of the academy adapting their developmental strategies to meet the evolving needs of the first team (e.g., players nearing contract completion, injuries, or the need for replacements) (Theme 6B). That is, these clubs directed their efforts towards nurturing talent specifically tailored to fulfil these demands, ensuring a seamless integration of players from the academy to the first team.

Limitations

While providing valuable insight into the talent identification and development strategies in elite European women's soccer, our study is not without limitations. Firstly, readers should remain cognisant that the findings are based on a purposive sample of elite clubs, thereby limiting the generalisability of the results to other clubs and cultures. We must also acknowledge that whilst all participants possessed extensive knowledge and experience regarding the talent identification and development practices at their respective clubs, our sample comprised a diverse group of key stakeholders, each with distinct roles and responsibilities. Although the relatively small sample size limits our ability to detect significant divergences in perspectives, it is plausible, and perhaps to be expected, that differences in viewpoints and philosophies may exist among participants based on their specific positions within their clubs. Meanwhile, due to the descriptive nature of our data, we cannot determine the efficacy of the talent identification and development strategies

discussed. This notwithstanding, the present study offers a comprehensive overview of some of the factors considered important by the most successful women's clubs in top-performing European nations. Future research should therefore focus on validating and further exploring the effectiveness of these strategies to provide a more robust understanding of talent identification and development in women's soccer.

Conclusions

To our knowledge, the present study represents the first exploration of the key factors deemed important by top-tier European women's soccer clubs regarding the identification, development, and selection of talent. While existing literature has explored factors impacting talent identification and development in male soccer (Reeves and Roberts 2020; Layton et al. 2023), there has been limited exploration of the specific processes employed within women's soccer. Moreover, previous studies have often been limited in scope, neglecting the cultural and competitive intricacies that inherently shape approaches to talent identification and development across nations. Thus, through a pan-European lens, we aimed to shed light on the talent identification and development strategies employed by the most successful women's clubs from some of Europe's highest performing soccer nations. Overall, our study contributes to the evolving research landscape in women's soccer, offering insight into the nuanced processes and strategies employed by elite clubs to develop the next generation of senior players. As the women's game continues to grow, such research may not only provide important insights for clubs but may also shape broader policy discussions at both national and international levels, thereby ensuring the sustained development of talent in women's soccer.

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Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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