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Understanding talent development in women's football: Bioecological insights from a mixed-methods study in a WSL Category 1 academy

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ABSTRACT

This study investigates talent development in women's football from a bioecological perspective, using a Women's Super League (WSL) Category 1, Professional Game Academy (PGA) U16 team as a case study. An explanatory sequential mixed-methods design was employed, with more weight afforded to the qualitative phase. In the quantitative phase, (n = 23; U16 academy players) completed the Talent Development Environment Questionnaire (TDEQ-5). This was followed by seven in-depth interviews with U16 players, nine months of participant observation and analysis of key organisational artefacts. Findings reveal a complex interplay between micro, meso and exosystemic factors shaping player experiences across athletic, educational and psychosocial domains. Key themes include individualised development, competition format, practice structure, transitional support and the role of robust social networks. The study highlights environmental factors that contribute to both functional and dysfunctional development in a high-performance setting. By integrating player perceptions with contextual insights and applying the Bioecological Athlete Development Framework (BADF), informed by Bronfenbrenner's Process-Person-Context-Time (PPCT) model and the Holistic Ecological Approach, this research offers a nuanced understanding of the WSL talent development pathway. The findings generated have practical implications for coaches, academy staff and policymakers committed to optimising female football development and talent development processes.

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Introduction

The establishment of the FA Women's Professional Game Academy (PGA) represents a pivotal shift in the developmental infrastructure of women's football in England (English Football Association, 2023). Supported by increased investment and visibility, professional clubs in England have introduced structured academy systems designed to provide holistic support across physical, technical, tactical and psychosocial domains (Jones et al., Emmonds et al., 2019; McBurnie et al., 2021). These talent development environments (TDEs) are intended not only to prepare players for professional football but also to foster broader personal development and sustained engagement with the sport (Gledhill & Harwood, 2019).

Despite these structural reforms, limited empirical insight exists into the lived experiences of female players within these environments (Alder et al., 2024). Research in football talent development has historically prioritised male populations and performance-centric models (Reeves & Roberts, 2020), with frameworks and policies often being applied to female settings without sufficient contextual adaptation (Gledhill & Harwood, 2019). This has contributed to a significant gender data gap, with only 9% of talent development studies from 1999 to 2019 focusing exclusively on female athletes (Curran et al., 2019). Such disparities hinder the development of evidence-based, gender-responsive practice and risk perpetuating systemic bias into emerging talent pathways. However, recent studies have begun to address this imbalance, highlighting variability in developmental activities (Andrew et al., 2024) and systemic challenges in talent identification and development processes (Alder et al., 2024).

To explore these complex, multi-layered environments, the present study adopts Urie Bronfenbrenner's bioecological model of human development (Bronfenbrenner, 2005) to examine how female academy football players navigate their developmental journeys. Building upon Bronfenbrenner's 1979 Ecological Systems Theory, the BMHD conceptualises development as shaped by interactions between the individual and multiple nested systems over time. These systems include micro, meso, exo and macro levels, with proximal processes (PPCT; Process-Person-Context-Time) as key drivers for change (Bronfenbrenner, 2005). The

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BMHD's emphasis on contextual nuance makes it particularly suited for studying talent development in women's football, where, despite recent investment, structural inequalities and institutional under-resourcing persist across these systems (Gledhill et al., 2017). This model has also been partially applied within athletic settings to explore both functional and dysfunctional elements of development environments (Henriksen et al., 2010).

However, the BMHD has also been critiqued for underemphasising structural inequality and power (Rosa & Tudge, 2013). In the context of women's football, this limitation is particularly salient. Despite attempts systemic inequities remain, such as fewer competitive fixtures, limited media coverage and reduced access to high-quality coaching and specialist support, are embedded within the macrosystem and cascade down to influence every level of athlete development (Alder et al., 2024; Curran et al., 2019; Emmonds et al., 2019; Fink, 2015; McQuilliam et al., 2022). These are not mere gaps in provision, but indicators of deeper institutional biases affecting visibility, legitimacy and resourcing of the women's game.

To address these complexities, this study integrates the BMHD with the principles of the Holistic Ecological Approach (HEA). Whereas the BMHD provides a lens for examining multi-level systems, the HEA emphasises the role of organisational culture, coherent support and long-term alignment. Together, these frameworks allow for a more context-sensitive analysis of TDEs.

Drawing on these multiple perspectives, we introduce the Bioecological Athlete Development Framework (BADF) (Figure 1): a conceptual framework that integrates Bronfenbrenner's Process-Person-Context-Time model with principles from the HEA. The BADF serves as an interpretative lens, guiding the design, implementation and analysis of the study. The BADF is grounded in Henriksen et al. (2010, p. 213) definition of TDEs as 'athletes' social relations both inside and outside the world of sport', and responds to Tudge et al.'s (2016) critique of the partial and inconsistent application of Bronfenbrenner's models in research. In doing so, the BADF refines the PPCT framework to focus more explicitly on the systemic nature of development, and the role of proximal processes, that is, the recurring, dynamic interactions between athletes and their context (environment) over time. As a system-level framework, the BADF conceptualises development as emerging from the interaction of four components, represented by the acronym A-C-P-T. The components are: (1) Athlete – understanding the individual; (2) Context – understanding the multiple systems (environments) that the athlete is embed in; (3) Process – acting as the engine of development, these are the everyday interactions between the athlete and their context; (4) Time – examining how time influences these interactions and development.

Within this structure, the athlete is situated at the centre of multiple connecting systems. Development is shaped not only by individual characteristics and agency (person), but also by the affordances and constraints within their immediate microsystem comprising football, personal and educational contexts and the broader interconnected meso, exo/macro systems. Time is treated as a critical developmental dimension, encompassing both micro-time (e.g., daily routines and training) and macro-time (e.g., career transitions). The BADF was explicitly developed to guide the design, implementation and interpretation of the study. It is not intended as a testable model, but as a theory-driven lens that responds to recent calls for context-sensitive and ecologically valid frameworks in talent development research (John & Thiel, 2022).

This mixed-methods study applies the TDEQ-5 and BADF to explore how female academy players experience and navigate their development within a Women's Super League (WSL) Category 1 Professional Game Academy. In doing so, it seeks to contribute to the growing body of gender-informed, dual-career research in elite sport, while offering applied insights for clubs, coaches and policymakers aiming to optimise developmental environments in the women's game. Specifically, the study was guided by the following research question: How do players and academy staff perceive the effectiveness of a WSL Category 1 Academy as a talent development environment, and how do these perceptions align with observed practices and institutional systems when examined through a bioecological lens?

Methods and materials

Study design

This study employed an explanatory sequential mixed-methods design (Figure 2) (Ivankova & Stick, 2007; Creswell & Plano Clark, 2011), comprising an initial quantitative phase followed by a more heavily weighted qualitative phase (Pass et al., 2022). This approach is recommended as best practice for exploring complex systems because quantitative findings can inform the qualitative inquiry's focus. The qualitative phase was informed throughout by the BADF, which integrates Bronfenbrenner's BMHD with the PPCT Framework Bronfenbrenner, 2005. In line with explanatory mixed-methods research, the Talent Development Environment Questionnaire version 5 (TDEQ-5; Li et al., 2015) was first

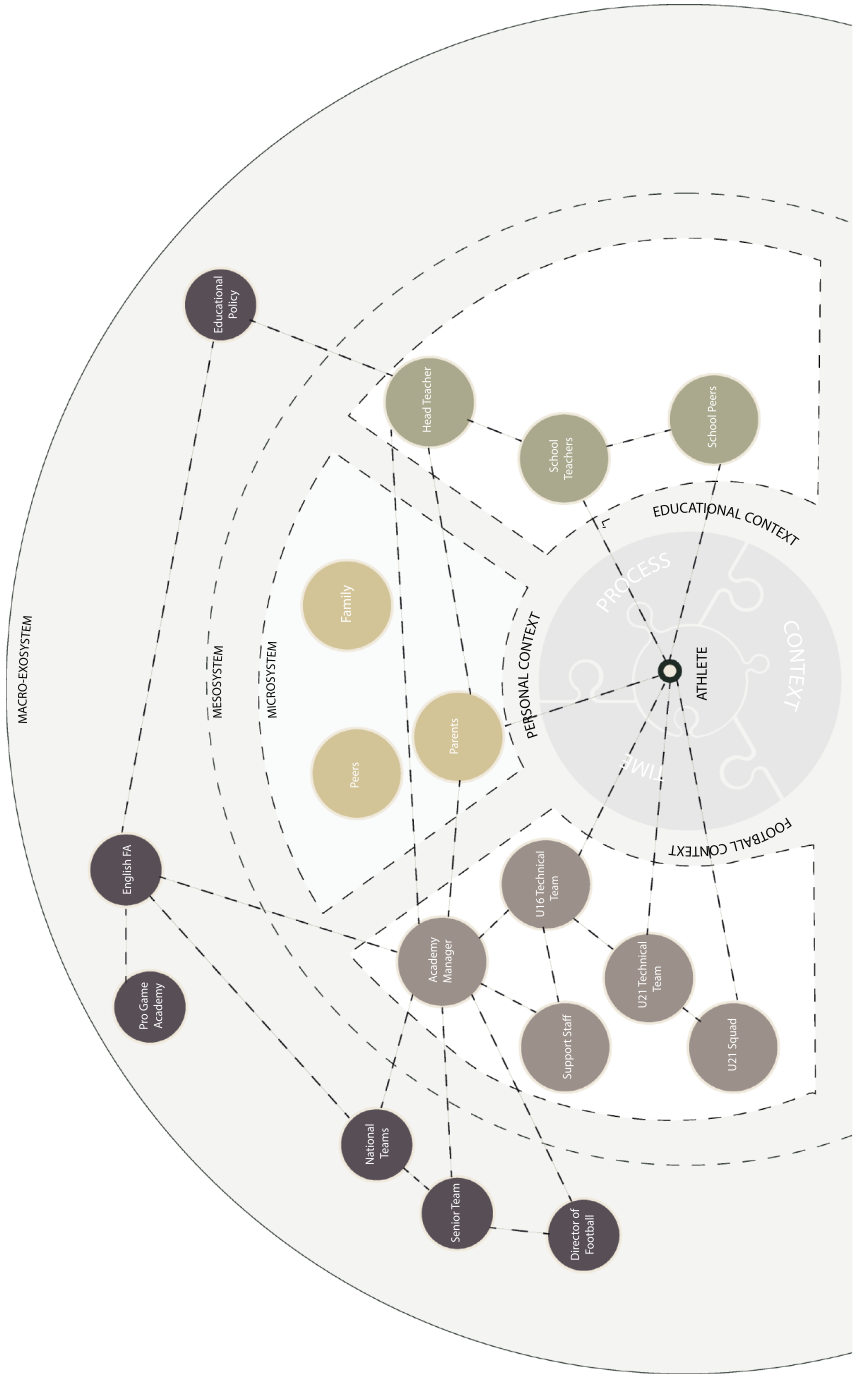

Figure 1. Bioecological Athlete Development Framework (BADF).

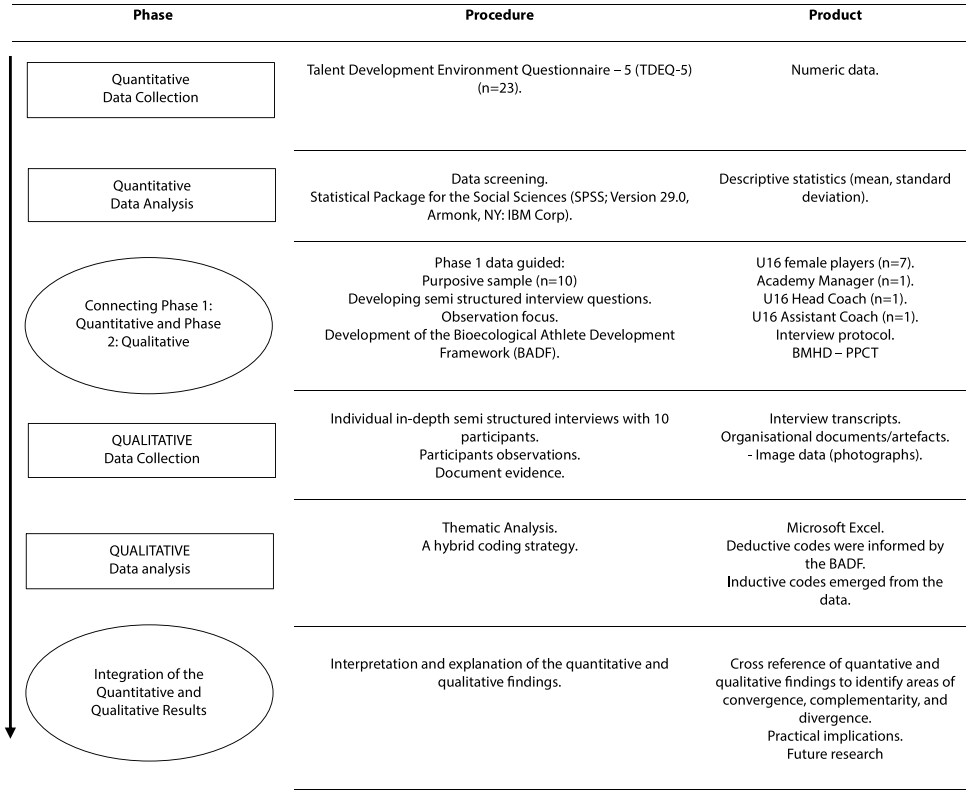

Figure 2. An explanatory sequential mixed-methods design procedure adapted from Ivankova and Stick (2007).

used to assess players' perceptions of their development environment. These results informed the design of semi-structured interviews, the focus of participant observation and the interpretation of academy documents (Creswell & Plano Clark, 2011).

Context and participants

This study was conducted at a Category 1 WSL, PGA in England during the 2023/24 season. This founding WSL club maintains a full development pathway.

This study focused on the under-16 team (n = 23; 15 ± 1 years old; height, 1.63 ± 0.07 m; body mass, 57.01 ± 8.16 kg) and was supported by a multidisciplinary technical team, including a head coach, assistant coach, physical performance coach, sports therapist, and performance sport psychologist. Players participated in a structured in-season schedule, including three pitch-based training sessions, three gym-based sessions, an online gym session and weekly fixtures.

A purposive sample of 10 participants was recruited from within the WSL academy environment. This included seven female academy players who completed the TDEQ-5 and participated in interviews, and three staff members: the academy manager, Sarah (pseudonym), the U16 head coach, Mel (pseudonym) and the assistant coach, Caroline (pseudonym). Technical staff varied in experience and qualifications: Sarah, a former professional footballer, transitioned into education and welfare roles before becoming the academy manager. Mel holds the Union of European Football Associations (UEFA) A license; Caroline is currently working towards the same qualification. Both have coached in professional football environments for over a decade.

Ethical approval was granted by an Institutional Ethics Review Board (23/SPS/057). All players were under 16 years of age, and therefore, informed parental/participant consent and verbal assent were obtained before participation. Given the participants' age and the potential power imbalances which can exist between researcher and participants, additional safeguards were implemented (Lahman et al., 2010). These included (1) explicit communication that participation or non-participation would not affect their selection within the PGA; (2) ensuring interview privacy and (3) assigning pseudonyms and removing club identifiers to protect anonymity.

Phase 1: Quantitative data collection

All 23 players in the under-16 PGA squad completed the TDEQ-5 (Li et al., 2015). This validated instrument

assesses athletes' perceptions of their developmental environment across five core dimensions: Long-Term Development Focus (LTD), Holistic Quality Preparation (HQP), Support Network (SN), Communication (Com) and Alignment of Expectations (AOE). The TDEQ-5 demonstrates good internal consistency with Cronbach's alpha ranging from 0.74 to 0.85 across subscales and 0.89 overall (Li et al., 2015). Questionnaires were administered in person at the training facility under the supervision of the lead researcher and a club staff member. Players completed the survey independently via Microsoft Forms on club-provided devices.

Phase 1: Quantitative analysis

Data were screened for missing and implausible values. Descriptive statistics (mean, standard deviation) were calculated for each subscale using Statistical Package for the Social Sciences (SPSS; Version 29.0, Armonk, NY: IBM Corp). Reverse scoring was applied as per the TDEQ-5 analysis guide (Li et al., 2015). Higher scores indicated more positive perceptions of the development environment (scale: 1 = strongly disagree to 6 = strongly agree). These results served as a diagnostic foundation for the qualitative phase of the study.

Phase 2: Qualitative data collection and analysis

Following the quantitative phase, qualitative data were captured using three methods: semi-structured interviews, participant observation and document analysis. This phase was guided by the BADF and designed to explain and deepen insights from the TDEQ-5 findings.

Semi-structured interviews

Semi-structured interviews were conducted with seven players who completed the TDEQ-5 and three members of the technical team. Interviews lasted between 45 and 65 minutes and were conducted face-to-face by the lead investigator in private rooms at the training facility to ensure participant comfort and confidentiality. The semi-structured interview guide was developed iteratively by the research team to ensure alignment with the study's conceptual framework. Guided by the BADF and preliminary insights from the TDEQ-5, the interview guide evolved to include role-specific prompts and open-ended questions that address key ecological dimensions such as long-term development focus, communication, holistic preparation and support networks (Tracy, 2019). For example, variation in players' responses on the Support Network and Holistic Quality Preparation subscales informed additional prompts about how family, school and club staff contributed to (or constrained) their day-to-day development and dual-career balance. The final interview framework addressed four integrated thematic areas: (1) personal biographies (e.g., prior football experiences, to educational background), (2) microsystem dynamics (e.g., relationships with coaches, teammates, players), (3) mesosystem interactions (e.g., coordination between school and club), (4) developmental transitions and challenges (e.g., deselection, education/football balance).

While the overarching thematic framework remained consistent across the interviews, questions were tailored to the participants' roles within the academy. For instance, players were asked questions such as, 'How would you describe your typical week?' and 'What are the biggest challenges you face balancing school and football?' Technical staff, on the other hand, were asked questions such as, 'Can you provide examples of how you ensure there is a clear individual development focus within the weekly training structure?' and 'Can you provide examples of how you monitor individual development targets between IDP meetings?'

Participant observation

The lead researcher engaged in ~250 hours of participant observation over nine months. Immersion occurred across both formal (training, matches, meetings) and informal (e.g., corridors, communal spaces) contexts. The researcher participated in practical support tasks (e.g., equipment set-up), facilitating rapport and naturalistic interaction with staff and players (Wood et al., 2023). A reflexive stance was maintained throughout, via journaling and memo writing to ensure analytical rigour and transparency in interpretation (Finlay, 2002). The researcher primarily occupied an *emic* position but incorporated *etic* perspectives throughout iterative reflection (Patton, 2015; Headland et al., 1990). Observational data were later triangulated with interview transcripts and TDEQ-5 responses to deepen contextual understanding and enhance thematic coherence. Observation data excerpts are presented in italics throughout the findings to distinguish them from direct interview quotations.

Documentary evidence

Document evidence included internal strategy documents, individual development plans (IDPs), technical curricula, and relevant FA policy guidelines. These artefacts provided organisational and policy context for interpreting developmental processes.

Phase 2: Qualitative data analysis

All qualitative data (interviews, field notes, documents) were analysed using thematic analysis, following the six-phase framework developed by Braun and Clarke (2006). The analysis followed a pragmatic, broadly realist approach to identify and interpret patterned meaning that reflected participants' experiences and environmental influences. A hybrid coding strategy was employed: deductive codes were informed by the BADF (e.g., microsystem, proximal processes) while inductive codes emerged from the data itself. Coding and theme development were conducted iteratively, with the researcher moving between raw data, codes, and candidate themes through multiple cycles. Themes were refined and triangulated with Phase 1 TDEQ data through comparison across data sources (TDEQ-5, interviews, observations, documents). Each theme was identified as either a booster, having a positive impact on the player's talent development experience or a blocker, having a negative effect. The data were then mapped onto the levels of the BADF to explore how developmental influences operated across different systems.

Rigour was established through integration at the methodological, analytical, and interpretive levels. At the methodological level, the sequencing of quantitative and qualitative components was deliberate, allowing for a coherent and iterative process. During analysis, themes from interviews, field notes, and document reviews were cross-referenced with TDEQ-5 results to triangulate and identify areas of convergence, complementarity and divergence (Creswell & Plano Clark, 2011). Interpretation drew on both data sources to construct a coherent, rich and multilayered account of the bioecological systems shaping player development. This reflects principles of meaningful integration in mixed-methods research (Fetters et al., 2013) and promotes interpretive coherence (Doyle et al., 2016).

Results and discussion

Analysis of the quantitative and qualitative data revealed four interrelated systems shaping player development across the academy: the microsystem, mesosystem, exosystem and macrosystem. These levels, derived from the TDEQ-5 and BADF, captured both the immediate and relational contexts in which players interact with training, education, family and institutional contexts. The BADF enabled exploration not only of immediate proximal interactions but also of broader developmental influences and constraints. Illustrative quotes, field notes, and documentary evidence are used to evidence and contextualise each theme, further exploring TDEQ-5 sub-themes as boosters (positive interactions) and blockers (negative interactions) within the athlete's TDE.

Microsystem: Personal context

The personal context, situated within the player's immediate environment, comprises the family, peers and immediate social settings that shape the others that influence the players' early experiences and provide ongoing support (Table 1). This theme captures how relational anchors influence engagement, identity formation and emotional resilience within the academy setting.

Sub-theme: Support network

Family members, particularly parents and grandparents, were consistently identified as central to players' sustained participation in football. Their involvement extended beyond logistical support (e.g., transport to training), but to emotional scaffolding, motivation and stability: 'They're [parents] very supportive . . . they bring me to training a lot. We live quite far away – an hour away, and they always support me' (Player 5). 'My grandad takes me to games and training, he's always there. He would always . . . he talks to me about football and life things like that' (Player 6).

In return, players described a strong sense of pride and responsibility, often internalising their family's investment as a motivator. 'They don't put pressure on me, and they always support me, even if I'm struggling . . . They always put my football first before any of them' (Player 4).

Non-football peers also played a valuable, although at times a challenging, role. They offered players a space for emotional release and balance the outside demands of high-performing sport: 'I can talk to them (non-football peers) about anything. Yes, it's someone different for me to talk to about football and things' (Player 4). 'They always say they want to come and watch me, and yes, they're just dead proud of me' (Player 6).

However, players also described a social trade-off, describing missed opportunities and reduced social interaction due to training commitments:

> They do see me, but they just think I'm busy all the time. I see them in school, but I'll only see my closest friends outside of school. I won't go out every single day for no reason. They understand I've got priorities, and they don't get annoyed when I can't go out. (Player 2)

Table 1. Summary of qualitative data from the PGA players' microsystem personal context.

Microsystem: Personal Context	
Sub Theme: Support Network	
Phase 2: QUALITATIVE PHASE	
Boosters (+)/Blockers (-)	**Exemplar Qualitative Evidence**
(+) Family support (+) Non-soccer peers.	"They (non-soccer peers) love it. They always say they want to come and watch me, and yes, they're just dead proud of me, really". Player 6
Sub Theme: Early Sport Experiences	
Boosters (+)/Blockers (-)	**Exemplar Qualitative Evidence**
(+) Positive early playing experience.	"I first got involved when I was in primary school, and it was just a club, and because I'm tall, I got thrown in goal, and I just loved it" Player 3

These insights echo previous research on dual career athletes, which highlights how relational support is essential, but also that social withdrawal can be a hidden cost of maintaining a position in a high-performing talent pathway (Henriksen et al., 2020; Linnér et al., 2020).

Sub-theme: Early sport experiences

Players' early sport experiences were characterised by sampling, informal play and mixed-gender formats. This is consistent with the Developmental Model of Sport Participation (DMSP; Côté et al., 2011), which emphasises early diversification and autonomy in early years. With players describing transitioning quickly from other sports to football once they found their passion:

> I used to dance to start with, and then it wasn't for me, so I used to go to football camps and the coach used to go, and she used to say I was always good. (Player 6)

Experiences in school and grassroots football, particularly mixed-gender formats, were viewed as both enjoyable and instrumental to development: 'I played with the lads … in Year 5 and Year 6 and I loved it' (Player 4). 'It was fun … grassroots is fun because you can go to tournaments and stuff' (Player 4).

These environments also enabled the development of some core psychological and technical skills: 'Playing against the boys at the weekends helped me get used to the physicality early … it made me brave' (Player 5). 'Always working hard, giving 100% … being a leader' (Player 2).

These early experiences created a foundation of resilience and shaped players' emerging athletic identities, an essential component of proximal processes within the BADF. They also highlight the importance of early context diversity, which may support longer-term adaptability and self-efficacy (Macnamara et al., 2010).

Microsystem: Football context

The football context represented an essential component of the player's immediate microsystem, shaping daily interactions, technical development and the formation of their identity. Based on the integration of TDEQ-5 sub-themes and qualitative data, three distinct but interrelated sub-themes were identified: (1) talent development foundations (TDF), (2) talent development system (TDS) and (3) talent development outcomes (TDO).

Observation data revealed that the core of this microsystem was the club's long-established training facility – a space rich in symbolism and functional integration. *The reception area featured quotes from iconic former managers and a 75-year-old family tree linking the club's past and present*. The physical layout of the space further facilitated development alignment. The ground floor housed the first team, academy and staff changing rooms, along with a shared treatment room and performance gym. The first floor included staff offices, a cafeteria doubling as a social hub and meeting rooms. *The cafeteria was regularly used by both staff and players, and informal staff-player interactions were frequently observed during lunch breaks and recovery periods*. Shared facilities

and visible interaction between the U21s, first team and academy staff reinforced an aspirational but accessible development environment.

Overarching theme: Talent development foundations (TDF)

Sub-theme: Infrastructure

Quantitative data positioned the support network subscale as a modest environmental strength (Table 2). Players agreed that their environment was well-staffed, accessible and emotionally supportive. Observational data further emphasised the training facilities' role as a central hub, offering proximity to staff, shared physical spaces with U21 players and opportunities for informal interactions, further emphasised by Player 1, 'The facilities are really good and the gym's good; we've now got more machines to use. It's good because we are close to the U21 team here, and the U21 coaches can see everyone, and they watch us because the training finishes just before'.

The academy's relational culture also emerged as a key structural foundation. Coaches were viewed as emotional anchors, not just technical instructors and a strong peer-based psychological network developed amongst players: 'If you've had a bad game, they'll say like. . .not everyone will have their best game, and you'll come back stronger' (Player 6). 'I message them a lot [teammates] . . . even though we are not in the same school. They praise me or support me when I have done well' (Player 1).

The coaching staff were acutely aware of the pressures players faced, particularly around transitions and deselection. As Caroline reflected, 'It's difficult at times . . . they have a lot going on with the transition meetings and school. It's difficult that some will progress, and others won't, but we all will support them during their time here, and in finding a new club, that is important to us, we want the players to support each other, we encourage that a lot' (Assistant Coach).

However, despite this relational strength, formal psychological support was inconsistent and reactive. The sport psychologist was employed on a part-time basis and was rarely visible in training spaces. Players were typically referred on a case-by-case basis rather than receiving structured or preventative support, with observation data indicating no visible psychological training sessions across nine months. Personal development content was not embedded in a weekly schedule.

The disconnect between strong interpersonal care and limited, proactive psychological preparation reflects similar studies of TDEs in women's sport. As Gledhill and Harwood (2019) highlight, emotional closeness is often under-prioritised over the delivery of structured psychosocial development, leaving players under-equipped to deal with setbacks and transitions.

Similar to findings within women's Handball and Ice Hockey environments (Mehus et al., 2025), the TDEQ-5, AOE subscale yielded a relatively high score (Table 2), suggesting that players experienced clear, consistent communication and a shared understanding of developmental priorities among themselves, academy staff and parents/carers. A key structural mechanism supporting this alignment was the use of a digital communication platform (Team App), which served as a central hub for scheduling feedback and daily planning:

> The academy manager always shares it (the weekly schedule) on Team App. You get your week's preview of what you're going to do, and then the weeks are always planned. It helps so I know what I'm doing, and I know what I need for training. (Player 4)

In addition to the digital communication, weekly U16 team meetings were held before training sessions. These meetings, led by the U16 coaches, provided updates and facilitated post-match reflections. At the core of the development process was the use of individual development plans (IDPs). Every player was provided with an IDP structured around the club's core football principles, covering technical, tactical, physical and psychosocial dimensions: 'I think the IDP helps. I think it identifies the things that they think I can get better on; I can work on them at home and get better in those areas' (Player 1).

When progression decisions were imminent or when players were considered high potential, the Head of Coaching or the Academy Manager also participated in IDP reviews. This gave players a clearer sense of what was required for progression to U21 or first team levels: 'They show us, in our IDPs . . . what you need to have in the first team. If we mirror how they play, then we know what to do' (Player 4).

These structured feedback mechanisms reflected a proactive, developmentally aligned culture that encouraged transparency and joint accountability. The inclusion of parents in the IDP review process further strengthened this alignment by ensuring that expectations were shared across both home and academy settings.

The TDEQ-5, HQP subscale returned a modest mean score (Table 2), reflecting inconsistencies in how well the environment prepared players holistically. While all players had IDPs aligned to the club's technical and physical principles, there was little evidence that these

Table 2. Talent development foundations. Summary of data integration from the football context.

Microsystem: Football Context				
Overarching Theme: Talent Development Foundations				
Sub Theme: Infrastructure				
Phase 1: Quantitative Phase			**Phase 2: QUALITATIVE PHASE**	
TDEQ Subscale	**Mean Score**	**Exemplar TDEQ-5 Question**	**Booster (+)/Blocker (-)**	**Exemplar Qualitative Evidence**
SUPPORT NETWORK (SN)	M = 4.00 SD = 1.05	I can pop in to see staff whenever I need to (e.g. Physiotherapist, psychologist, strength trainer, nutritionist, lifestyle advisor).	(+) Access to facilities (+) Relational Culture (-) Reactive Support	*"If you've had a bad game, they'll say like, "Not everyone will have their best game, and you'll come back stronger" (Player 6)*
ALIGNMENT OF EXPECTATIONS (AOE)	M = 4.03 SD = 0.89	My progress and personal performance are reviewed regularly on an individual basis.	(+) Consistent Communication (+) Individual Development Plan (IDP)	*"I think the IDP helps. I think it identifies the things that they think I can get better on, I can work on them at home and get better in those areas" (Player 1)*
HOLISTIC QUALITY PREPERATION (HQP)	M = 3.33 SD = 1.16	The guidelines regarding what I need to do to progress are not very clear.	(-) Lack of Individualised Targets (+) Sense of Belonging.	*I don't think I've been set one target all season. I think they'll just set a group target for the team to do but not individual" (Player 2).*

plans shaped ongoing training or post-match reflection. Player feedback highlighted a lack of individualised targets and limited feedback continuity throughout the week: 'I don't think I've been set one target all season. I think they'll just set a group target for the team to do' (Player 2). 'I don't feel like they give us much feedback, to be honest. I feel like it could be better, and I don't think it helps us develop' (Player 6).

Observation data confirmed that although IDP meetings occurred at defined intervals, their content was seldom revisited during on-pitch interactions, resulting in a disconnect between formal planning and real-time coaching. In response to this gap, players often initiated their development targets. However, these self-devised goals were not consistently shared with or supported by technical staff: 'In training, I like to set myself a target, like to be more confident on the ball and drive forward. So, I try to do that in training' (Player 1). Similarly, Player 5 reflected, 'I had things over Christmas that I wanted to improve … I had a goal for every day … I think it worked'.

While this autonomy is encouraging, the absence of alignment between player-initiated and staff-led development indicates a missed opportunity to individualise support and embed a culture of feedback. Paradoxically, despite these structural shortcomings, players described a strong sense of emotional belonging and cultural cohesion within the academy. Observational and interview data pointed to routine rituals and relational gestures, such as daily handshakes, casual conversations, and symbolic end-of-session team huddles:

> Players and staff gathered at the centre circle, celebrated and concluded with a shared chant ("xxxx on three!). These practices reinforced the club's cultural identity and strengthened player-staff bonds.

The discrepancy between the warm relational culture and the lower HQP score points to a critical distinction between emotional support and structured holistic preparation and aligning with and extending previous work. Both Gangso et al. (2021) and Sargent Megicks et al. (2022) reported that HQP often emerges as a variable or underdeveloped domain, even within high-performing TDE systems. Gangso et al. (2021) found that higher HQP scores were associated with structured dual-career planning and dedicated psychosocial support. In contrast, Sargent Megicks et al. (2022) highlighted misaligned perceptions, particularly between players, coaches and parents.

The current findings extend this body of work, revealing that while players in the academy felt emotionally supported, this was not matched by systematic feedback, integrated psychosocial input or individualised progression planning.

Overarching theme: Talent development systems (TDS)

Table 3 presents TDS as the structural and interactive processes that guide how players engage with sport-specific development. The TDS reflect both the strategic design of the long-term player development

Table 3. Talent Development System. Summary of data integration from the football context.

Microsystem: Football Context				
Overarching Theme: Talent Development System				
Sub Theme: Long-Term Player Development				
TDEQ-5		**Phase 1: Quantitative Phase**	**Phase 2: QUALITATIVE PHASE**	
TDEQ Subscale	**Mean Score**	**Exemplar TDEQ-5 Question**	**Booster (+)/Blocker (-)**	**Exemplar Qualitative Evidence**
LONG TERM DEVELOPMENT FOCUS	M = 4.33 SD = 0.79	My training is specifically designed to help me develop effectively in the long term	(+) Structured developmental pathway. (-) Lack of strategic frameworks (-) Practice structure. (+) Individualised Coaching Feedback	*"we've been practising corners and set plays, now I'm a lot better when it comes to corners, and I have the confidence I'm going to get the first touch to a ball."* Player 1
		Sub Theme: Competition Structure		
		Phase 1: Quantitative Phase	**Phase 2: QUALITATIVE PHASE**	
		Exemplar TDEQ-5 Question	**Booster (+)/Blocker (-)**	**Exemplar Qualitative Evidence**
		My coach emphasises that what I do in training and competition is far more important than winning.	(+) Mixed-game formats. (-) Matchday selection. (-) Lack of resources.	*. They're more interested in your development and the performance of the team. Because after a match, even if we've won, they say they're happy that we've won, but say we didn't play the best, they would tell us".* Player 7

focus and the immediate competition structure that influences skill acquisition and progression.

Sub-theme: Long-term player development

Consistent with findings in women's football (Gledhill & Harwood, 2019) and male football environments (Mills et al., 2014; Mitchell et al., 2021), the LTD subscale received a strong mean score (Table 3), indicating that players viewed the environment as oriented towards long-term growth over short-term performance. Document analysis supported this perception: a mission statement, a five-pillar development framework and position-specific profiles aligned with first-team expectations were all in place to guide progression. As discussed by one of the players:

> I've got the two-year Under-21 offer, it'll be an education for the next two years, and then potentially I can go to America or get another year with the U21s, and then it's whether they want to give me the professional contract or not. (Player 3)

This structured developmental pathway supported players' ability to plan and visualise their next steps. However, several players raised concerns about limited exit routes outside the PGA Category 1 academy system, with some clubs operating a restricted talent pathway and adopting a U21 supergroup model comprising small groups of high-potential players that do not compete in a structured league format and train on a hybrid structure alongside other supergroup players, the first team, and a dual registration club, while other clubs lack U21 provision entirely. Players viewed the system as unforgiving.

> I feel like once you get dropped, there's nowhere else to go except to grassroots, because there are no lower professional clubs and limited semi-professional opportunities. (Player 1)

This highlights the structural vulnerability in the women's game and suggests that more robust exit and transition planning is needed, especially for players not retained at the Category 1 level. Despite strong messaging around progression, interviews and observations revealed a misalignment between strategic frameworks and day-to-day training delivery. No documented technical syllabus was in use, and coaches reported relying on a response, player-driven approach: As Sarah stated, 'We work with the players in front of us, they are the curriculum'.

These findings align with recent work by Mitchell et al. (2024), which explored how sports practitioners conceptualise and operationalise developmental environments through deliberate planning-doing-reviewing processes. Their work advocates the importance of aligning strategic objectives with day-to-day delivery and using both explicit strategies (e.g., consistent messaging, structured induction) and implicit mechanisms (e.g., psychological safety, stretch through challenge) to shape coherent talent environments.

Players frequently described a lack of realism and situational relevance within the practice structure:

> So, in the games, they'll say what we could have done, but they're not working on that training with us. We just do the same thing, but it's not preparing us for the game. (Player 6)

This was further emphasised by another player:

> I don't think it's very realistic because there's no pressure on the ball, so they never actually play the ball back to me. For me, it's just playing out the ball to one of my defenders, and I don't have to do anything else. (Player 5)

Still, players valued individualised coaching feedback, which partially mitigated the training gap. Coaches tailored their communication based on personality and learning preference. As Mel discussed: 'Each individual is different, so we try and use different types of feedback, some players like it live and others prefer it at the end. It's about meeting their needs' (U16 Head Coach). This was further emphasised by one of the players: 'They'll pull you to the side, and they'll just say stuff that you've done well, but what you need to improve on . . . it's just to you, not in front of everyone else' (Player 7).

Sub-theme: Competition structure

Similar to other European football clubs (Mcewan et al., 2024), the competitive programme was designed to promote long-term development through exposure to mixed-game formats, including fixtures against U14 boys' teams and peer PGA teams. While physically demanding and often resulting in losses, games against boys were viewed as developmentally valuable: 'I like it because I feel like it's a different challenge, because some of them are huge, so that's a good challenge, so I'm battling against them' (Player 4).

This reflects a growth-oriented mindset amongst players and supports previous work suggesting that challenge-rich experiences have the potential to build resilience and adaptability (Collins et al., 2016). Despite this, performance pressure increased during cup competitions, with a shift in messaging from development to outcomes: As discussed by one of the players:

> It's more performance, I think, because they remind us. Because we've been playing the boys, it's hard, and we don't win much, so they remind us after every game, it's your performance as well. You shouldn't reflect and look at the scoreline. (Player 3)

The PGA league also operates on a 50% equal playing time rule to promote balanced opportunities. However, this was met with mixed perceptions:

> I don't know if it's been the best, because I think game time's the most important thing to build up my confidence at the start of the season with a new team. It isn't the best, but then I also have the county, and I play a lot of matches for them. (Player 5)

The MD-1 meeting, held before matchdays, provided tactical previews and revealed 'the starting 11'. While intended to support preparation, this process sometimes created anxiety due to a lack of clarity around selection decisions. This was summarised by Player 2: 'It stresses you out when you find out and the sleep before, because you know you're not going to be starting. I think they could tell you why and give you more information'.

Preparation sessions we facilitated by the coaching staff, who relied on diagrams and slides but were limited by the absence video analysis, especially when compared to the U21 squad: 'I don't think they have videos of every game that the boys are playing, but the 21s, do. You can learn more if you can see how the opposition defends' (Player 2).

Overarching theme: Talent development outcomes (TDO)

Talent development outcomes (Table 4) reflect the transitional phase in which players move from structured academy support towards more autonomous engagement with higher levels of the game. These outcomes are shaped by the quality of preceding foundations (TDF) and systems (TDS) and are critically influenced by the extent to which players are prepared to progress both within and beyond the academy.

Sub-theme: Progression

The TDEQ-5 COM subscale (Table 4) yielded a modest score, suggesting that players experienced variable clarity regarding next steps and progression expectations. While some felt supported and informed, others reported inconsistent messaging and limited feedback related to selection and planning. This finding stands in partial contrast with the 'high challenge, high support' culture, a mantra emphasised within the environment but not uniformly felt in relation to progression planning: 'They celebrate it. If we're around each other, they go, "Ooh, 21s". They make sure I know it's a good thing, and I'm doing well' (Player 3).

This culture of verbal recognition and informal validation was described as confidence-boosting and motivating. As highlighted by Player 2 during a recent U21 game. 'After the game, I played the first half, *** came over and went, "How did you find it?" and said, "I played well". That helped me because obviously if you thought

Table 4. Talent development outcomes. Summary of data integration from the football context.

Microsystem: Football Context				
Overarching Theme: Talent Development Outcomes				
Sub Theme: Progression				
Phase 1: Quantitative Phase			Phase 2: QUALITATIVE PHASE	
TDEQ Subscale	**Mean Score**	**Exemplar TDEQ-5 Question**	**Booster (+)/Blocker (-)**	**Exemplar Qualitative Evidence**
Communication (COM)	M =3.50 SD =1.39	Staff at Academy and I talk about what current and/or past world-class performers did to be successful.	(+) Opportunities to train across. (+) Demands of Progression (+) Role Model Interaction (+) Progression Support	*I like learning about their experiences and how they coped with some of their challenges that they faced. Like, dealing with an injury or something, I how they bounced back from it.* Player 3

you had a bad game, you'd just let your confidence go, but because the coach did that, I think it's helpful. Because it just makes you know what you're doing right and not wanting to go away from the stuff you know and carry on training'.

A key motivator was the opportunities to train with the U21 team, particularly during holiday periods or when no weekend fixtures were scheduled. These cross-over experiences were pre-planned and were viewed as both aspirational and challenging. As Mel explained, 'If there's no U16 game Saturday, can we have some of the U16 players in with the U21? It will be a good experience and give them a challenge' (U16 Head Coach).

The club's approach to progression was framed not just as a technical and tactical challenge but as a holistic developmental milestone. Structured opportunities to train with the U21 team exposed players to greater physicality and tactical demand: 'It's just everything about it, because it's faster movement, and obviously, the first time, you have to get used to it, but now I know the team, it's nice to be around them' (Player 4).

Further supporting a successful progression, the environment provides role model interactions with current, future and past professionals. These interactions often occur when players train with the U21's allowing players to better understand the level of performance, standards and expectations, acting as a motivator as discussed by Player 2: 'it just shows you it's not like a million miles away, and you could work to it'. Additionally, these role model interactions act as key learning opportunities for players, as discussed by Player 3: 'I like learning about their experiences and how they coped with some of the challenges that they faced. Like, dealing with an injury or something, I see how they bounced back from it'.

The club recognises that the uncertainty of progression can cause stress on players and carefully designs progression meetings so they don't coincide with the exam period. Conducting progression meetings earlier on in the season also allows the club to better support the players, as this allows 'conversations around next steps and support strategies, like, can we even get them into another club before they start their exams, so they know their next steps. So by doing them before the first of March, this helps them have a little bit of time before they go into the final exams' (Academy Manager).

Additionally, not every U16 player will progress within the pathway, and therefore, education and personal development are seen as equal to football development within the environment. 'It's not appropriate to take individuals out of school when they're under the age of 16 for whole squad day release. One particular individual out of a squad of 20 might make that transition into the first team. Why would I take 20 girls out of education when that (education) could be their next step?' (Sarah).

These findings highlight the need for a well-defined progression policy that offers clarity and support to players, supporting their transition within the pathway and allowing them to learn from role models (Hauser et al. 2022).

Microsystem: Educational context

The educational context formed a critical component of the player's microsystem as they navigate the early stages of dual-career engagement (Table 5).

Sub-theme: Navigating dual career identity

Identity dissonance was frequently reported by players, particularly where teachers failed to accommodate or recognise the legitimacy of their athletic commitments:

Table 5. Summary of qualitative data from the PGA players' microsystem educational context.

Microsystem: Educational Context	
Sub Theme: Navigating Dual Career Identity	
Phase 2: QUALITATIVE PHASE	
Booster (+)/Blocker (-)	**Exemplar Qualitative Evidence**
(-) Identity dissonance (-) Workload Management (-) Exam Pressure	*"They don't understand, and it's just not a nice environment where I know the teachers don't understand me, and they always seem to have a problem with it. Other girls who do it, they don't have the same problems with the teachers. Some teachers understand, and then some teachers just don't".* Player 4

> They'll ask me to come to revision sessions every day after school, and I'm like, "Well, I can't because if I go, I'm late for training", and they just don't understand it … they don't understand, and it's just not a nice environment where I know the teachers don't understand me, and they always seem to have a problem with it. (Player 4)

This mismatch between academic and athletic expectations represents a mesosystemic breakdown, where the lack of coordination between key institutions forces the athlete to self-manage conflicting roles (Stambulova et al., 2013). Aligned with Ryba et al. (2017) the players focus is on workload management as a central coping strategy allowing time to invest in football development

> I get to school quite early in the morning, so I'll do some revision or some homework in the morning. However, most of the time I do it on the bus or do some revision on the bus. So, it's just little stuff like that. I haven't got it in the back of my mind, then stressing about it. (Player 4)

Despite such proactive strategies, academic pressure often escalated, particularly around examination periods. Here, the academy acted as a function support mechanism – offering adaptive flexibility to protect well-being: 'Last time I had mock [examinations], I had a meltdown at training, so the academy manager put in a timetable of when I should not come to training and do revision instead' (Player 2).

Mesosystem

The mesosystem demonstrates the interactions between the player and the different contexts that the player interacts with, for example, football and personal context. The importance of balance between the different contexts will boost the player's holistic developmental experience (Table 6). However, if there is a balance between these contexts, this can block the player's development, causing tension between the player and the context.

Overarching theme: Contextual interaction

Sub-theme: Football and educational context

Interactions between the football academy and schools varied considerably in quality and consistency. While the appointment of an education officer appeared to enhance communication, these improvements were inconsistent: 'I think it helps with some teachers, like my maths teacher. She's just started to understand a bit more, and I think, coming from an adult, they've probably worded it better than I would' (Player 4).

However, not all players are educated at the same school, and this presents further challenges, and these positive football and education interactions are inconsistent, as discussed by Player 5:

> They just want us all to get the best marks possible, and especially before that email was sent, they said I wasn't getting any special treatment, the same as every other student, but then since that email, they did phone my Mum and say that I would get a bit more time, but then over the past few weeks, it's shown that it hasn't. In my history lessons, especially, I get homework for the next day every single time.

Exam coursework support was a positive football and education interaction as the education officer and coaches liaised with schools to support players in developing highlight reels to be used as evidence, helping reduce the pressure during the exam period as summarised by Player 4: 'It's given me a better grade in my GCSE for coursework, because we have to collect clips and all that, and I think without them, I'd have to go to the pitch myself and do clips there, but I think now that it's in a game, it's given me a better grade. This helps because it's one less thing that I have to do myself, which causes a lot of worries and that'.

Table 6. Summary of qualitative data demonstrating the interaction between the football and education context.

Mesosystem: Contextual Interaction	
Sub Theme: Football and Educational Context	
Phase 2: QUALITATIVE PHASE	
Boosters (+)/Blockers (-)	**Exemplar Qualitative Evidence**
(-) Inconsistent communication (+) Exam coursework support	"Well, last time I had mocks, I had a meltdown at training, so *** just put in a timetable of when I should not come to training and do revision instead, and my next mocks come up in about a week, two weeks". Player 2
Sub Theme: Soccer and Personal Context	
Boosters (+)/Blockers (-)	**Exemplar Qualitative Evidence**
(+) Open lines of communication	"We have this thing called Team App, and they have a parents' group, or they can make separate groups, it takes the pressure away". Player 1

These findings highlight the need for alignment among key stakeholders, with established processes reducing tension and supporting players' broader identity (Book et al., 2023; Jiang et al., 2024).

Sub-theme: Football and personal context

Parent and coach interactions were minimal during training and competition. *Observations revealed how parents often watched training and competition from designated viewing areas, having little input. The club's training facility had a designated parent space that was separated from the main training facility, where parents enjoyed hot drinks and snacks.*

Any interactions that did occur are often prearranged and during key time points, for example, IDP or progression meetings. Meetings were often organised and facilitated by the Academy Manager, who acted as the main source of parental communication. Parents waited within the reception area where the Academy Manager met them. Players valued these interactions as discussed by Player 4: 'I think it's good to get that feedback in a meeting, and have my Mum and Dad there, so that my Mum and Dad can hear it too, so then they see something, and they can help me'.

Despite the coach/parent interaction being minimal, parents remained informed of developments and had open lines of communication. This was through two lines of communication, firstly, the academy manager facilitated a parent group messaging app that allowed parents to raise concerns and continue to be informed of key information. This was positively perceived by players within the environment, as summarised by Player 5: 'My Mum messages them quite a lot, and then when I come in, she'll tell them how I'm getting on and stuff. It keeps my Mum in the loop with them, so she knows what's going on, so my Mum doesn't have to worry'. Additionally, a parent rep represented the parent group and acted as a sounding board for feedback and any other areas of concern.

Exo/macro system

The exo/macrosystem reflects the external setting that indirectly influences the player, along with the broader cultural and societal contexts.

A central component within the exo/macrosystem was the FA/PGA. These key stakeholders set minimum operating criteria and provided essential funding for the PGA and, at times, educational workshops. Despite this central component within the players' exo/macrosystem, there was little discussion and understanding of the FA/PGA role as summarised by Player 3: 'They just manage the league and that, and our fixtures'. And Player 4: 'I don't know about the FA and what they do, really'.

Additionally, Football/Youth culture played a role in how the player's identity was perceived within peer groups, as discussed by Player 1: 'They're always just like, Oh, we're going to have a friend who's going to be famous, rich and stuff, but they don't get it'. This association between fame, wealth and football does not align with the realities of being a professional female athlete who often manages dual careers.

Limitations

While this study provides a detailed, context-rich exploration of a high-performing women's academy environment, several limitations must be acknowledged. First, the findings are based on a single case study, which limits generalisability to other WSL academies or female football settings internationally. Second, the sample size for the quantitative phase was small, reflecting performance-level access constraints, and may not capture the full range of player experiences, particularly those of individuals who disengaged from the pathway. Third, although efforts were made to triangulate methods, the reliance on self-reported perceptions in the TDEQ-5 and interviews may be influenced by social desirability bias. Future research would benefit from longitudinal tracking, inclusion of comparative academy contexts and wider stakeholder perspectives, including parents, educational staff and first-team coaches, to build a more holistic understanding of system-level development processes in women's football.

Practical implications

The findings offer several practical implications for coaches, academy managers and policymakers working in women's high-performing environments. First, structured coaching curricula and technical syllabi should be embedded to reduce inconsistencies between development frameworks and training delivery. Second, regular review mechanisms, including multidisciplinary feedback loops and player-coach debriefs, should be introduced to evaluate environmental effectiveness and ensure alignment with long-term developmental goals. Third, clear communication protocols and transparent progression planning are required to support player confidence and reduce anxiety during transitional phases. Finally, exit and dual-career planning should be integrated early in the pathway to address the limited structural opportunities currently available outside the Category 1 system.

Conclusion

This study provides a nuanced analysis of a Category 1 WSL academy environment. The findings revealed a well-established foundation of relational and emotional support; however, inconsistencies between strategic development frameworks and practical delivery – particularly in coaching curriculum, session realism, and progression planning – limited the environment's coherence. While players valued individualised feedback and exhibited a growth-oriented mindset, the absence of formal review structures and clear progression pathways posed risks to both performance and psychosocial development. Interpreted through the BADF framework, these results emphasise the importance of aligning proximal processes with systemic support across micro- and mesosystem levels. Practically, the findings point to the need for structured coaching curricula, consistent communication strategies and integrated transition planning. Future work should further examine how gender-specific systemic constraints influence the translation of development frameworks into practice, with an emphasis on supporting holistic and sustainable player trajectories within women's football.

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