

How do small-sided games play a role in skill acquisition in the most productive European Football Academies? Insights from coaches developing Europe's top-tier players

Nick Gearing, Matt Bridge ^{*} 

School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, United Kingdom

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ABSTRACT

Small-sided games (SSG) are a widely used training method in European football academies, fostering technical skill development and tactical awareness. Whilst the effectiveness of SSG for player development is well acknowledged, the prevalence of use of this approach and how it fits into wider academy activity is less well understood. To address this gap, academy coaches ($n = 10$) from thirteen of the most productive club academies took part in semi-structured interviews that explored how SSG are incorporated into academy training methodologies. Interviews found that the 1v1, 2v2, and 3v3 formats were used as a link from the ball mastery phases of skill acquisition Movement Coordination (MCT) phase of the PoST framework, to the Skill Adaptability Training (SAT) phase of the framework, emphasizing representative learning design through task constraints. While smaller formats enhanced technical opportunities, 4v4 + games better replicated competitive match dynamics, reinforcing decision-making under realistic conditions, closely linked to the Performance Training (PT) phase of PoST. The findings support the use of SSG in optimising skill acquisition for academy players and detail when and for what reason the coaches used them.

Introduction

Skill acquisition can be understood through multiple theoretical lenses, ranging from traditional information-processing models focused on internal motor representations [1] to ecological dynamics perspectives. Ecological dynamics views skill as emerging from the ongoing interaction between the athlete, the task, and the performance environment [2–4]. Games-based and Small-sided games (SSG) practices are widely used in football coaching [5–7] with national football associations recommending using these and constraints-led approaches (CLA) as tools to develop young players [8]. Bhagat et al. [9] have shown that SSG offer young players more opportunities for technical engagement in dribbling, passing, and receiving, than traditional drill-based methods, resulting in measurable improvements in performance. A meta-analysis by Clemente et al. [10] provided strong evidence supporting the use of SSG for both technical skill development and tactical behaviour enhancement, reinforcing their relevance in structured youth training environments. Their capacity to create realistic, pressure-rich settings allows players to develop perceptual and decision-making skills along with technical execution [11]. Despite evidence of their effectiveness

there remains a lack of comprehensive data on how consistently these methods are applied across different systems and regions of European academies [11,12].

Whilst it is easy to put all SSG together under the same umbrella, there appears to be a difference in outcomes depending on the number of players involved. Lex et al. [13] looked at the frequency of technical events in smaller format 3v3 games such as FUNiño [14] in comparison to 6v6 and 7v7 formats, finding that mean passing, dribbling, shooting and scoring events per minute in 3v3 were all higher, and in some cases double or triple the frequency of 6v6 formats. Owen et al. [7] confirmed these findings, showing that as the numbers of players on each team increased from 1v1 up to 5v5, the number of passes, dribbles, turns, and occasions receiving the ball decreased. The effects of differences in team size has been acknowledged by the English Football Association, with their in-house research showing that the number of touches per player in a ten-minute match were again lower with larger teams; of 3v3 (71), 5v5 (57) and 7v7 (37) [15,16].

The Periodisation of Skill Training (PoST) framework [17] provides one way of organising practice within a nonlinear pedagogy by varying the representativeness and complexity of training tasks. Movement

^{*} Corresponding author.

E-mail addresses: nicholas.gearing@live.co.uk (N. Gearing), m.bridge@bham.ac.uk (M. Bridge).

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Coordination Training (MCT) emphasises stabilising core movement patterns through repetition without repetition [18], while Skill Adaptability Training (SAT) increases perceptual demands and variability to help players adapt their actions in more dynamic environments. Performance Training (PT) then focuses on fully representative, game-like situations that promote perception–action coupling and the emergence of flexible movement solutions [19,20]. Although PoST has often been illustrated using goalkeeper-specific examples, the principles align closely with the rationale for using SSGs, which typically sit within SAT or PT due to their focus on information-rich, constraint-led learning environments. Clarifying this connection highlights how SSGs can be understood within a nonlinear approach to skill acquisition and provides a conceptual foundation for examining how academy coaches interpret and apply these practices within their own developmental contexts. To build on this theoretical foundation, the present study examined how coaches working in Europe’s most productive academies use different SSG formats across the pathway, the purposes they assign to these practices, and the ways in which their decisions reflect wider beliefs about skill, learning, and practice design.

Given the evidence for their effectiveness SSG clearly have a role to play in player development and the possibility of them bridging the gap from more isolated practices to match like situations. However, there is a lack of knowledge covering the professional football academy use of SSG in the development of successful players. This work continues to bridge this gap between football and research, by exploring the use of SSG amongst the coaches who have helped to develop footballers playing in the top 5 European Leagues (top division in England, France, Spain, Germany and Italy). In doing so it examines the coaches’ views of how and when SSG have been used and are perceived to have contributed to the development of these players. Therefore, the aim of this study was to explore and interpret how small-sided games are implemented within elite European football academies, with a view to informing both theoretical understanding and applied coaching practice.

Methods

Participants

To recruit participants, we used a targeted sampling approach that focused specifically on coaches working within Europe’s most productive academies. Productivity was defined using publicly available data on the number of players developed by each club who were competing in the top-tier leagues of England, Spain, Germany, France, and Italy as of October 2020. Each player was matched to the academy in which they were registered at age 16, enabling us to identify their ‘home academy’ and determine which clubs had developed the most active elite players for the big 5 leagues. This method provided a standardised and practical way to rank academies based on their contribution to professional player development. Potential participants ($n = 18$) were approached through professional channels, including networking platforms like LinkedIn, as well as via direct contacts within the research team’s professional network. Coaches were eligible to participate if they had held an academy coaching role at one of the identified top 20 academies within the previous two decades. This time frame was chosen to ensure that all coaches had direct exposure and influence to coaching environments responsible for producing players now active at the professional level at various stages of the academy development phases. Their roles included designing weekly training sessions, supporting long-term player development plans, and contributing to the implementation of club playing philosophies and practice frameworks.

Coaches ($n = 10$) took part in the study, each from a different club within the sample, with some coaches representing more than one club. For anonymity, coaches are referred to by club-specific abbreviations (as shown in Table 1). Their tenure within their respective academies ranged from 2 to 12 years ($M = 6.3$, $SD = 3.8$), with their roles spanning different stages of the academy pathway. Specifically, two participants

Table 1

Participants of the research and initials to be known by in this paper.

Coach	Initials (to identify coach through the paper)
Feyenoord Rotterdam Coach	FC
Sporting Clube de Portugal Coach	SLC
Manchester United Football Club Coach	MUC
Manchester City Football Club Coach	MCC
Arsenal Football Club Coach	AC
Futbol Club Barcelona Coach	FCBC
Chelsea Football Club Coach	CC
Southampton Football Club Coach	SC
Ajax Amsterdam Coach	AJC
Associazione Sportiva Roma Coach	ASRC
Futebol Clube do Porto Coach	FCPC
Tottenham Hotspur Football Club Coach	THC
Valencia Club de Fútbol Coach	VC

worked mainly in the Foundation Phase (U9–U11), one in the Youth Development Phase (U12–U16), two in the Professional Development Phase (U17–U21), and five in positions that covered multiple phases or had whole-academy responsibilities (e.g., roles equivalent to Head of Coaching, or roles covering all ages). Ethical approval for the study was obtained from the university’s research ethics committee (Ref: ERN_2022–0230).

Although the academies included in this study were selected based on productivity, they do represent distinct national and cultural traditions in player development, spanning England, Spain, Portugal, the Netherlands, Italy and others. Prior research has shown that European academies are far from homogeneous, with national coaching systems and local football identities shaping how clubs interpret concepts such as player autonomy, tactical structure, or representational practice design [21,22]. For instance, Southern European academies are often characterised by a strong emphasis on positional play and collective behaviour. In contrast, Dutch academies have historically highlighted individual creativity and adaptive decision-making, while many English academies combine game-based approaches with more explicit work on 1v1 dominance and physical duelling, reflecting different developmental priorities [22]. These cultural nuances did not form the primary analytical focus of the present study, but they are important in interpreting the breadth of views reported here; coaching beliefs identified across the sample should therefore be understood as emerging from diverse footballing ecosystems, rather than from a single uniform European coaching culture.

Table 1 outlines the clubs represented by the coaches and the abbreviations used throughout this study.

Procedure

A series of retrospective, semi-structured interviews were conducted with each participant individually, in English. These interviews, which lasted between 32 and 98 min (average duration: 62 ± 17 min), were held via Zoom video conferencing. Each session was recorded on the platform, automatically transcribed, and subsequently reviewed for accuracy by a researcher, with any transcription errors being corrected. The interview framework consisted of predetermined topic areas, but the discussions remained flexible to allow interviewees to elaborate on key points, explore emerging themes, and provide deeper insights based on their experiences. This qualitative approach aligned with Interpretative Phenomenological Analysis (IPA) as outlined by Smith and Shinebourne [23], ensuring a thorough exploration of each coach’s perspective. Examples of the semi-structured interview questions are presented in Appendix 1.

Data analysis

Following transcription, an inductive thematic analysis was

conducted to examine the structure and format of training sessions within academy environments, with a particular focus on small-sided games (SSG) and individual practice (IP). Thematic analysis (TA) was performed according to the six-step framework established by Braun and Clarke [24], a widely recognized and rigorously tested methodology supported by further research [25–27]. The analysis was carried out by the lead author with the second author checking coding and themes throughout the analysis period. To strengthen the quality of the analysis, the researchers remained aware of their own coaching backgrounds and how this may have influenced the interpretation of the data. The coding process was reviewed by a second researcher, with any differences in interpretation discussed until agreement was reached. Themes were developed through an ongoing process of reviewing and refining the data, ensuring they reflected the perspectives of the participants rather than a single interpretation.

The analysis was conducted in the following structured phases, the thematic maps illustrate the progression from initial coding through to the development of final themes, highlighting how patterns within the data were grouped and refined during the analysis process:

Phase 1

The original audio recordings were reviewed, and transcripts were thoroughly examined multiple times to ensure familiarity with the content. Repeated reading and active listening enabled the identification of recurring patterns within the data. Initial notes were compiled to highlight emerging themes.

Phase 2

Systematic coding of the transcribed data was performed, categorizing responses in relation to the semi-structured interview questions. Codes such as 'curriculum design,' 'academy coaching experience,' and 'football and academia' were applied to relevant transcript segments. NVivo 12 software facilitated the organization and management of these codes.

Phase 3

The coded data was analyzed to identify potential overarching themes. Similar codes were grouped together into meaningful categories, following Tuckett [28] approach. Nodes were created within NVivo 12 to classify these initial thematic areas. This phase also involved examining relationships between codes, leading to the

development of primary themes (e.g., curriculum design) and corresponding sub-themes (e.g., club philosophy, player development strategies). Fig. 1 illustrates the preliminary thematic map derived from this process.

Phase 4

Each identified theme was critically reviewed to ensure alignment with the coded data and relevance to the research objectives. Themes and nodes that lacked direct significance to the study's core focus of SSG were excluded. For instance, aspects related to coach education and qualifications were deemed peripheral to session design and subsequently removed. Fig. 2 presents the refined thematic map.

Phase 5

Two primary themes were finalized (Fig. 3). The analysis revealed that different formats of small-sided games yielded distinct developmental outcomes for players, supporting prior research [7,13]. The final themes were defined as:

- i) 1v1, 2v2, 3v3
- ii) 4v4 +

Phase 6

The final stage involved presenting the findings in a written report,

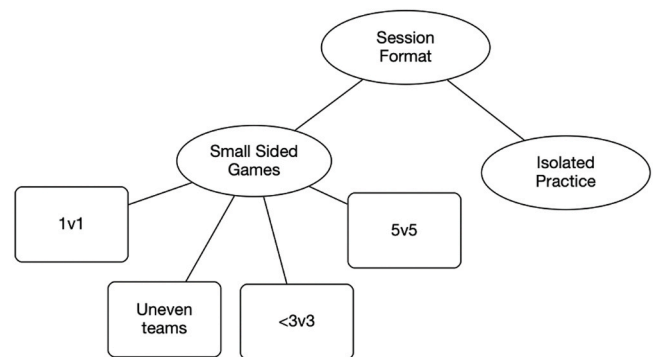


Fig. 2. Developed thematic map, showing the main theme and five sub-themes associated with this study. The oval is the main theme of the paper, and the rectangles with rounded edges were the sub theme relevant to the overall aim of the study.

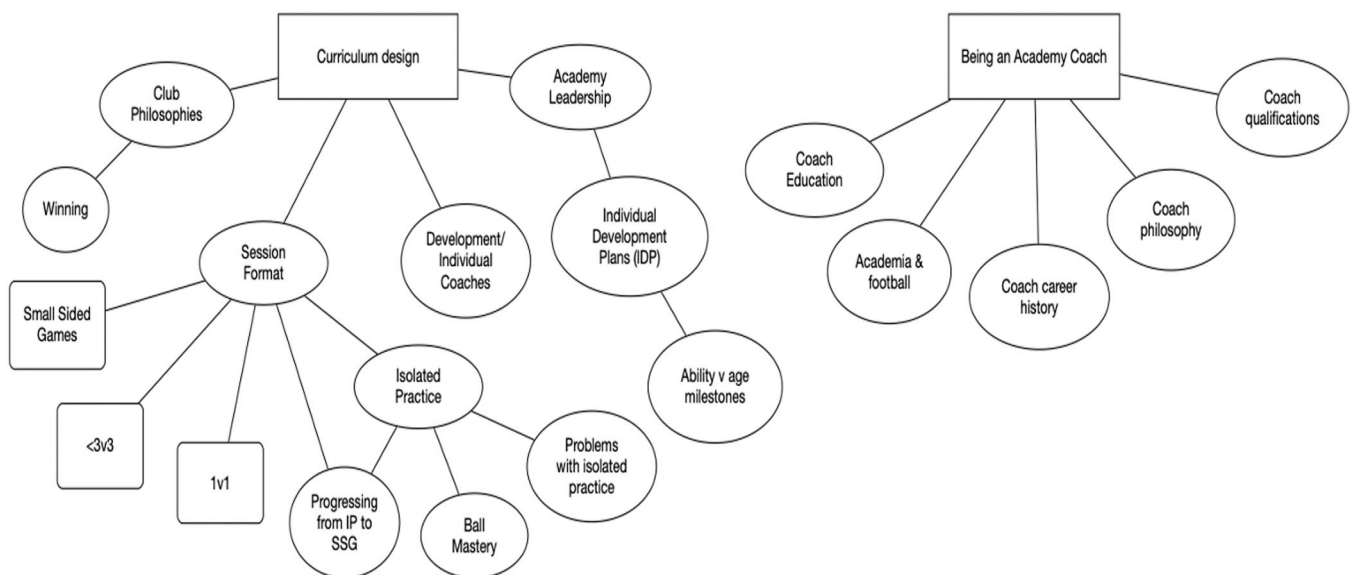


Fig. 1. Initial thematic map, showing potential themes of study. The rectangles represent the main course of the conversation, while ovals became the themes within that, and finally the rectangles with rounded edges were the focused sub theme relevant to the overall aim of the study, which were spoken about in most detail.

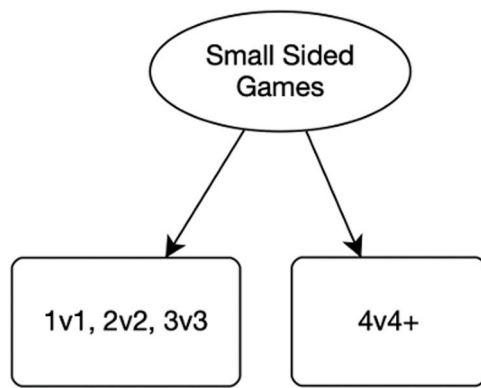


Fig. 3. Final thematic map, showing the final three themes for the study. The oval is the main theme of the paper, and the rectangles with rounded edges were the focused sub theme relevant to the overall aim of the study, which were spoken about in most detail and focused on for this study.

detailing how the identified themes relate to the study's context. Direct excerpts from the interviews were incorporated to illustrate key points and provide a coherent narrative of the participants' experiences. The full results and discussion are presented in the subsequent sections.

Findings & discussion

To maintain confidentiality, all participants' names have been anonymized. Each coach is identified based on the club they are representing when discussing their experiences. In cases where a coach provided insights on multiple clubs, interview questions were structured to ensure clear differentiation between the practices of each club and the section speaking about each club is represented as that club's name. While the findings are presented as two broad themes (1v1–3v3 and 4v4+), this should not be interpreted as a strict division of practice. Rather, these formats exist along a continuum, with coaches often blending and adapting them depending on the objective of the session. The decision to present the findings in this way was made to provide clarity, while still recognising the complexity and variability of coaching practice within elite academies.

1v1, 2v2, 3v3

Following a Ball Mastery (BM) warm up consisting of players having a ball each and manipulating the ball in a CLA based activity, many coaches discussed how these skills would then be used in a practical setting of SSG, with three or less players on each team.

THC-

"Under Chris Ramsey and John McDermott (Head and Assistant Head of Academy), very much based around ball mastery and individual stuff... based around 1v1 domination... 1v1 duels, then some real small-sided games like 2v2 or 3v3"

Academies place a very high level of importance on this type of SSG due to the allowance of experiencing game environments with more time on the ball.

MUC-

"Massive part of it, massive at our club, especially younger age groups, absolutely huge...we do so much 1v1 work...1v1s, 2v2 are massive...even when they get to be under 14 s, 15 s, 16 s, it still plays a massive part and the tactical side of it comes in a lot more then."

Whilst the interviews enquired about 1v1, 2v2 and 3v3 games, there emerged a theme of academies using variations of these to unbalance teams to make it more realistic to situations found in a full match situation.

AJC-

"...because in Ajax ball possession is one of the things which is most important, then it was 2v1 or 3v2 to start with, and then you progress into more complex situation...I do some transition games was first 1v1 and it becomes 2v1, then it becomes to 2v2 or 3v2 and then becomes 4 (players on a team)...that was about 30% of the week"

Knowing the long-term goal of playing this variety of SSG is important in understanding the reasons behind this selection of session design. The use of these formats can be understood through the principle of representative task design, where practice maintains key informational variables of the game while allowing for greater repetition and individual engagement.

MUC-

"you can watch any game across the world, it's a battle of 1v1s all over the pitch, you know, especially when there's counter attacking football, which is the style that we like to play; exciting, flare, creating players who fans want to come and watch really you know, proper Man United players..."

SLC-

"For me, 3v3 is the basis, the nuclear form football...I've worked a lot with the game principles; progression, offensive cover... 3v3 you (do) have all of this. But we worked a lot on 1v1, 2v1, 2v2, and so on... With goals. Sometimes a goal was not a traditional goal but sometimes a line."

This preference for smaller-sided formats may reflect the increased opportunity for player involvement and repetition, while still maintaining key perceptual and decision-making demands. From an ecological perspective, these formats allow for the manipulation of constraints in a way that preserves perception-action coupling while increasing exposure to relevant affordances. Whilst there is a lot of evidence of the use of these SSG in the most productive academies in Europe, there is also scepticism as to whether all these formats are valuable and relatable to the full game of football, and how they can become that.

ASRC-

"I think 1v1 doesn't exist in football... In the 1v1, if I want to beat my opponent, my opponent knows that I have a team mate maybe or he has a teammate so the only real 1v1 in modern football is (when) player is alone against the goalkeeper."

FCBC-

"...sometimes when physical coach demands this kind of exercise you do 2v2 or 3v3 but not (usually)...but always if we do we, the coaches put the focus on the situation on the pitch of looking for superiority...for example, (Lionel) Messi is always in 1v1, he has the superiority by quality...So if you play 3v3...we put the main focus on our game model."

VC explained that the club preferred to have a minimum of four players on at least one team as that was believed to be closer and more realistic training of game situations, whilst the MCC highlighted 4v4 and more being more common than 3v3.

VC-

"6v6, 3v3 plus one neutral or 5v5 one plus or two neutral... that structure was more common than 1v1, or 2v1, or 3v2. That (the latter) structure was more present in the finishing drills or attacking situations"

MCC-

"Overall, I probably say about 60–40. 60% is 4v4 and more, and 40% is 3v3 and less."

Playing games that are 3v3 or less allows players to experience task constraints, realistic to the game of football but with a higher frequency of technical actions. Lex et al. [13] found a higher frequency of technical events in smaller format 3v3 games in comparison to 6v6 and 7v7 formats. If repetition is important this would suggest that 3v3 is more appropriate in these competitive games, however there was no measure

of the quality of these events. Clemente et al. [29] showed that 1v1 subphases in football introduce more individual risk, something that then influences the skill being performed supporting these dual twos with one team having more players than the other team, to replicate situations that arise within an 11v11 match [30]. A higher number of players on one team produces more frequent ball control opportunities, but a numerical advantage leads to less exploratory behaviour [30], which could be argued is no more positive to skill acquisition than BM and IP. Whilst the studies mentioned have shown an increase in the number of opportunities to perform skills [13,30], the proximity to the goal in SSG due to pitch size will potentially adapt the skills being used, making it less representative to the competition of a full match, something ASRC points out in suggesting that there is never a true 1v1 in football. The two Spanish clubs, FCBC and VC, are the two main clubs that claim not to use 1v1 to 3v3 practices in their sessions, working more on the theory that these scenarios develop naturally in a larger game with at least seven players on the pitch. Spain is famed for its possession-based style of football [31], and the focus on this style therefore requires more players to enable replication of competitive team movement, which is not possible in 3v3 and less players.

4v4+

The use of isolated and unopposed practices has been recognised in both Gearing and Bridge [32] and these interviews, along with the links from these practices to the use of smaller sided games, however an important factor to remember is that players need to prepare for a competitive football match in “real and difficult situations” as FC referred to them as.

ASRC-

“The main thing is to keep everything very game related... as close as possible to the real situation. What works in the training session has to work in the game and the opposite. So for me, the players have to leave the training session like the game, and the game, like the training sessions. So they have to recognize the oldest situations that they have rehearsed in the training session, they have practice like in the game.”

In contrast, larger-sided formats appear to increase tactical complexity and game realism, requiring players to process more information and coordinate actions within a team context. This may support skill transfer by more closely aligning practice with the demands of competitive performance. A lot of possession practices are used in academies with the goal being to move the ball into a specific area of the pitch or complete a specified number of passes as a constraint to encourage proper passing technique.

FCBC-

“our possessions are maximum 6v6...If you have more players you use them as jokers”

SLC-

“...many ball possession games with goals...sometimes the goal is not like a traditional goal, but a line or other objective but that's it”

A theme across all academies was each whole-team training session ending with a SSG, almost always with a minimum of 4v4 players on each team, whether that be to bring all the technical skills together, or simply to add an element of fun and competition to the session.

THC-

“Thursday was like a games night, we do like a half technical, unopposed warm up, and then you do like the games night, free game basically, small sided games.”

SC-

“Pretty much the end of every session will try and play a game. I think we've got to remember that's probably the reason why the kids turn up”

In the games to finish a session, there was a tendency for coaches to not use more than 5v5. This has been shown as an approach used in

many studies [33] and links to the PT phase of the PoST framework [17] in allowing players the performance training in maximum task complexity settings. With 4v4 + games being at the opposite end to BM sessions in Ribeiro et al., [34] continuum of practice design, this has the support from academia as it is seen as more representative to the competition game of football [35,36].

These size teams and games-based scenarios are linked to the coach being the facilitator and feedback coming mainly from the environment that the players are involved in [37,38] rather than the coach. Formats with non-traditional goal post positions, i.e. 4 goals positioned in the corners of the pitch, or goals positioned on the field of play rather than at the edge, created more turning, dribbling and shooting actions from players [39]. The studies mentioned have shown an increase in the number of opportunities to perform skills, but the difference in pitch size and goal position will potentially take away the realism of a competitive match and therefore will show little more representativeness than IP.

SSG are supported and recommended in research [37,40] due to giving realistic game situations, allowing players to calibrate actions to execute solutions to the problem they have been set [20,40].

While the coaches in this study generally recognised the value of SSG, their reflections also highlighted ongoing tensions between different coaching ideologies, particularly regarding how much training should resemble the full game versus how much emphasis should be placed on more isolated or structured work. These differences were especially clear in comments from coaches who questioned the relevance of some formats, such as the ASRC suggestion that true 1v1 situations rarely occur in modern football, or the preference from FCBC and VC for larger, more collective practices linked to their positional-play game models. Such views echo broader debates in coaching and skill acquisition, where ecological dynamics and constraints-led approaches highlight the importance of representative learning environments [3], whereas other traditions continue to value controlled repetition or technical refinement in more stable practice settings [1, 32]. In practice, most academies appear to blend these ideas, adjusting methods depending on age group, club philosophy, or the specific aims of a session. Recognising these tensions provides important context for the findings, showing that even within highly productive academies, SSG are interpreted and applied through different coaching beliefs rather than a single unified approach.

The findings can be further interpreted through the lens of the PoST framework. Smaller-sided formats (1v1-3v3) described by coaches appear to align most closely with the Movement Coordination Training (MCT) and Skill Adaptation Training (SAT) phases, where the emphasis is placed on repetition with variability, perception-action coupling, and the refinement of individual technical actions under constrained conditions. These formats allow for increased involvement, higher repetition rates, and greater exposure to key affordances, supporting the development of adaptable coordination patterns.

In contrast, larger-sided formats (4v4 +) appear to correspond more closely with the later phases of PoST, particularly Skill Adaptation Training (SAT) and Performance Training (PT), where greater tactical complexity, representativeness, and game realism are emphasised. Coaches' use of these formats reflects an intention to integrate individual technical actions within broader team contexts, increasing the perceptual and decision-making demands placed on players.

This alignment suggests that, rather than being used in isolation, different small-sided game formats may function as complementary components within a broader skill development process, supporting progression from individual coordination to collective performance.

Across the interviews, there was a clear identity in how coaches viewed the role of SSGs, with most describing them as essential for increasing player involvement, creating realistic information-movement relationships, and supporting decision-making in environments that reflect the demands of the game. Coaches consistently highlighted that smaller formats enabled more touches and repeated engagement with opponents, while larger formats helped connect technical actions

with tactical context. However, discrepancies emerged in how SSGs were interpreted and applied across clubs and coaching backgrounds. Some coaches questioned the representativeness of smaller formats such as 1v1 or 2v2, whereas others saw them as central to developing individual dominance. Similarly, coaches from clubs with strong positional-play identities tended to favour larger, structured possession games, while those from other contexts emphasised flexibility and variability across formats. These similarities and differences illustrate that while SSGs occupy a common place in elite academy practice, their design and purpose are shaped by contrasting coaching beliefs, cultural influences, and developmental priorities.

It is also important to consider that the academies included in this study represent a range of footballing cultures and coaching philosophies. These contextual differences may influence how small-sided games are designed and implemented, including the emphasis placed on technical repetition, tactical understanding, or game realism. As such, variations observed in coaches' approaches may not solely reflect individual preference, but also the broader cultural and organisational context in which they operate. This highlights the importance of understanding practice design within its specific environment, rather than assuming a single optimal approach. As highlighted by Renshaw et al., [4] and O'sullivan et al., [41], there is no one-size-fits-all solution when it comes to coaching and learning.

Although each academy applied SSG differently, several phase-specific take-home messages emerged across the interviews. In the Foundation Phase, coaches emphasised the importance of smaller formats such as 1v1, 2v2 and 3v3 to maximise touches, repeated engagement with opponents, and opportunities for players to explore creative attacking solutions. These formats were seen as crucial for developing confidence, ball-carrying skills, and individual dominance in early years. Within the Youth Development Phase, coaches described a more blended approach, using both small and larger SSG formats to help players connect individual actions with emerging tactical understanding. Here, SSG were used to stretch players' awareness of space, timing and combinations, while still allowing for high technical involvement. In the Professional Development Phase, coaches tended to prioritise larger, more tactically complex formats that increasingly reflected positional responsibilities and the demands of the full game. SSGs at this stage were used to refine decision-making under pressure, work within game models, and prepare players for transitions into senior football. Taken together, these insights highlight how SSG design evolves across the pathway, supporting a progression from individual exploration to unit-based understanding, to full game realism.

Practical implications

From a practical perspective, the findings suggest that different small-sided game formats can be used to achieve specific developmental outcomes. Smaller formats (e.g., 1v1–3v3) appear particularly useful for increasing repetition, individual involvement, and decision-making under pressure, making them well suited to earlier stages of development or when focusing on technical actions. In contrast, larger formats (e.g., 4v4 +) may be more appropriate when the objective is to develop tactical understanding, positional awareness, and game realism.

Coaches may therefore consider how SSG formats are selected and progressed within sessions and across development phases. For example, a session may begin with smaller formats to emphasise individual actions before progressing into larger-sided games to integrate these skills within a more representative team context. This highlights the importance of aligning practice design with the intended learning outcome, rather than viewing SSG as a single, uniform tool. Additionally, coaches can manipulate constraints within each format (e.g., space, player numbers, rules) to further shape behaviour and target specific outcomes.

Limitations

Several limitations of this study should be considered when interpreting the results. While the targeted sampling of coaches from highly productive academies provided valuable insight into high-level practice, the relatively small sample size ($n = 10$) should be acknowledged. As with most qualitative research, the findings are not intended to be generalisable to all football contexts but instead provide in-depth insight into specific environments. In addition, the use of goal-directed sampling may introduce a degree of selection bias, as the coaches included represent a particular level of the game. As such, the findings should be interpreted within the context of elite academy football. As interviews were conducted in English, which was not the first language of all participants, this may have influenced the depth or clarity of some responses.

The process used to identify each player's 'home academy' was based on their registered club at age 16. While this approach offered a consistent and practical method for large-scale data collection across multiple countries, it is acknowledged that some players may have joined these academies later in their development journey. More detailed academy history data was not available at the necessary scale to track earlier affiliations. In addition, the study design involved interviewing a single coach from each academy, which presents a constraint in terms of representativeness. The views expressed by each participant reflect their individual experiences and may not fully represent the wider coaching philosophy or practices within their respective clubs. Variability in coaching roles also introduces a further limitation, as some coaches worked within specific age phases (such as Foundation or Professional Development), which may limit their knowledge of coaching practices in other phases. To address this, interview questions clarified the age groups each coach was familiar with. Lastly, as with most qualitative research, the subjective and interpretive nature of thematic analysis makes it difficult to determine the extent of consensus or variation between participants across academies. This affects the degree to which the findings can be generalised to the broader professional academy landscape.

In addition, the findings are based on retrospective accounts from coaches, which may be subject to recall bias. There is also the potential for social desirability bias, where participants may present their coaching practices in a more favourable way. Furthermore, the study relies on self-reported data and does not include direct observation of training sessions, meaning that reported practices cannot be independently verified. These factors should be considered when interpreting the findings.

Future research

Further work on training session design to understand technical outcomes was undertaken after this study was completed [42]. Future research could extend these findings by incorporating players' perspectives on SSG use, offering an important counterpart to coaches' accounts. Understanding how different formats shape players' perceptions of challenge, learning opportunities, and game understanding would help determine whether coaching intentions align with lived experience.

Conclusion

From the evidence presented in this study, a mixed approach to SSG practices of 1v1, 2v2, 3v3 (and variations of these), as well as 4v4 + are recommended from coaches in the top 20 most productive European Football Clubs. As highlighted by Renshaw et al., [4] and O'sullivan et al., [41], there is no one-size-fits-all solution when it comes to

coaching and learning. Although this study provides reflections on practices deemed effective by experienced coaches, it is essential that clubs support coaches in interpreting their own specific environments. Coaches should be empowered to apply methods they consider appropriate, rather than replicating strategies from others without adaptation.

CRediT authorship contribution statement

Matt Bridge: Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Nick Gearing:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.footst.2026.100047](https://doi.org/10.1016/j.footst.2026.100047).

Data availability

The authors do not have permission to share data.

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