

No solutions, only trade-offs: An exploration of contextual factors influencing rugby union talent development environments

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ABSTRACT

Talent development environments (TDEs) strive to develop junior athletes towards senior elite performance, however, are subject to a range of contextual factors influencing their operations. This study aimed to investigate the influence of contextual factors on efficiency and effectiveness across all English rugby union men's academies. Fourteen focus groups were conducted, one for each academy. Underpinned by pragmatic research philosophy, focus group discussions were analysed via reflexive thematic analysis. Analysis led to the generation of four themes to explain the impact of contextual factors: "multiple loosely connected concurrent environments", "regulation drives practice", "organisational influences" and "searching for bang for buck". Findings suggest complex interactions between a network of individuals and organisations, both internal and external to the structure of the talent system. In this context, it seemed inadequate to only consider the role of a single TDE. Overall, results reflect contextual and resource challenges constrain practice within English rugby union academies. In practice, we suggest the need to consider the tension of regulation to enhance minimum standards, against the increased autonomy that may result from flexibility of regulation to facilitate enhanced efficiency and effectiveness.

ARTICLE HISTORY

Received 22 November 2024
Accepted 23 March 2025

KEYWORDS

Contextual factors; talent development; efficiency; effectiveness; rugby union



Introduction

Developing junior athletes towards senior performance defines the success and sustainability of sporting organisations (Martindale et al., 2005). The talent development environment (TDE), defined as "all aspects of the coaching situation" influencing athlete development (Martindale et al., 2005, p. 354), is considered to be one of the more controllable aspects of athlete development. As such, many professional team sports organisations have shaped environments to develop athletes, often using the organisational structure of an academy. Establishing and maintaining academies requires significant resourcing, as such it is important for organisations to understand their efficiency (the relationship between organisation inputs and outputs) and effectiveness, reflected by the ability to achieve organisational goals (Bayle & Madella, 2002). However, there are multiple factors impacting TDE operations, notably associated sporting organisations, rules and regulations, and the broader sporting context.

In this sense, we might consider the TDE to be part of a wider complex system, with multiple levels of interaction and potential analysis (Taylor, MacNamara, et al., 2022). For example, policies implemented by the macro level will impact individual athletes on the micro level. A widely researched

example being the setting of selection cut-off dates invoking relative age effects, affecting player selection and progression (Kelly et al., 2021; McCarthy et al., 2022). Otherwise, the meso level individual academies are influenced by the policies of the macro level (De Bosscher et al., 2008). In essence, the purpose of the macro policy should be to promote features of effective talent development, though this has received less attention in the literature compared to the research focused on meso level TDEs (Henriksen et al., 2010a, 2010b, 2011). As such, there is a need to consider interactions between the macro, meso and micro levels of the talent system, and how these interactions may influence talent system and TDE effectiveness.

Effective TDEs are often characterised as those 'producing' elite athletes (Feddersen et al., 2021, p. 30) and aiming for holistic development (Hauser et al., 2022). Across a range of sports and contexts, it seems that effective TDEs share common features including long-term aims and methods, coherent messaging and individualised support (Henriksen et al., 2010a; Martindale et al., 2005). Ineffective environments are characterised by the opposite features of a successful environment, notably a lack of integration amongst different aspects of the TDE, incoherent organisational culture, the lack of supportive training groups and role models, and a lack of understanding from the athlete's non-sport environment. Importantly, Hauser

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This article has been corrected with minor changes. These changes do not impact the academic content of the article.

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et al. (2022) noted that effective and ineffective features may exist concurrently within the same environment. However, research has primarily been conducted in contexts with a singular primary development environment. In some sports, several organisations may be directly and significantly involved in a single athlete's development (e.g., club, school, age-grade international; Bjørndal et al., 2017; Taylor, Collins, et al., 2022), with some organisations potentially beyond the influence of talent system regulation. Research of interorganisational relationships have highlighted the importance of cooperation between multiple organisations in aiding talent development (Babiak et al., 2018; Mathorne et al., 2021; Mathorne et al., 2020; Sotiriadou et al., 2017). Effective organisational relationships are characterised by collaboration in decision making and actions (Mathorne et al., 2021). However, historically this research has been limited to talent development networks comprising limited numbers of organisations, with athletes only directly interacting with one of them. As such, there is a need to consider the impact of other sporting environments and organisations and how they impact an athlete's curriculum, representing the totality of their experience (Taylor & Collins, 2022).

Efficiency within talent systems is commonly assessed practically using conversion rate metrics, denoting the ratio between the number of selected athletes against those that progress between stages (e.g., Till et al., 2014), or achieve senior elite performance (e.g., Anderson & Miller, 2011). Depending on the context of the sport, talent systems may inherently be inefficient given the non-linearity of development, the inability to determine who will progress, and the need for a critical mass of participants within TDEs (Baker, 2022). For example, it is assumed that the low percentage of players to progress from academies to the English Premier League is inherently negative (e.g., 3% - Cunningham, 2022). The alternative way of making sense of this data is that the football talent system offers opportunity for large numbers of players and, by definition, only a very few will ever reach an elite level. It should, of course, be a concern if ineffective practice leads to maladaptive outcomes for participants. In this sense, the context of the sport and talent system needs to be appreciated when evaluating efficiency. However, research demonstrates variability in the efficiency and effectiveness among multiple TDEs in the same talent system (Anderson & Miller, 2011; Shelley et al., 2025). As such, it is also important to understand factors influencing TDE efficiency and effectiveness across the meso level to inform and innovate macro level sport policy.

English rugby union macro context

To this end, in addition to examining the interactions between different levels of the talent system, it is important to understand the context in which the talent system operates, the backdrop or conditions that shape events and behaviours within it (Proeller, 2013). English rugby union (RU) provides a unique context to consider the interactions between macro, meso and micro levels of the talent system. At the macro level, the NGB (Rugby Football Union; RFU) and Premiership Rugby Limited (PRL; the body representing the professional Premiership clubs) collaborate to develop players capable of

competing at the senior elite domestic and international level, via a regional academy structure. At the time of this study 14 male regional academies were in operation, of which 10 were integrated with professional clubs competing in the Premiership (England's elite domestic competition). The remaining four were standalone academies managed by the RFU owing to the demise of three Premiership clubs in the 2022/23 season.

The male English RU talent system is organised in three phases: Developing Player Programme (DPP), junior academy, and senior academy. DPP is a "pre-academy" programme aiming to supplement the development of the top 10% of under 14 to under 16 (U14-U16) rugby players in each region (Hall et al., 2024). The "junior academy" comprises age grades under 16 (U16) to under 18 (U18). Operating part-time, the junior academy aims to support players' development towards a senior contract, training up to three times per week (depending on phase of the season). The rest of a player's curriculum is enacted by alternate TDEs, typically at local clubs, schools and, for some, international squads. Specifically in the junior academy, a player's educational environment becomes a significant TDE. Broadly, player's educational establishments can be divided between "state" or "private" schools. State schools are government-funded and free to access, with the RFU supporting a "Academy, Colleges and Education" (ACE) league, whereby select state further education colleges are associated with regional academies. Alternatively, private schools (otherwise known as "independent schools") charge admission fees. A previous report suggested that 37% of the England, Scotland and Wales international men's RU squads were privately educated (Sutton Trust, 2019). Whilst schools may be a significant TDE in an athlete's curriculum, they are largely beyond the influence of RFU and PRL regulations.

After the U18 season, professional contracts are awarded to a small cohort of players aged between 18 and 24 years of age who transition to the senior academy. Specifically at the time of the study, this senior academy TDE only existed for 10 academies integrated with Premiership clubs. At this stage, a player's curriculum will be enacted across professional club, lower league loan club, and in a minority of cases a university rugby TDE. Within the junior academy, a subset of England eligible players who are perceived by the academy to have the highest potential for future senior elite performance may be nominated to become an "England Academy Player" (EAP; Till et al., 2020). The RFU mandates that EAPs receive increased academy resourcing often above and beyond their age-matched peers, including practitioner attention, medical insurance, individual development programmes, and stakeholder liaison.

Academy boundaries are a relatively unique talent development policy of English RU, with the macro level organisations designating each academy a geographical perimeter (see Figure 1). Players are allocated to a region based upon either their home, school, or junior club address (providing inclusion at club is from 13 years of age). Each academy is restricted to selecting players within their boundary to prevent competition between academies for players (Till et al., 2020).

Through considering academy-specific conversion rates and contribution to Premiership player net development, previous research into the efficiency and effectiveness of the English RU

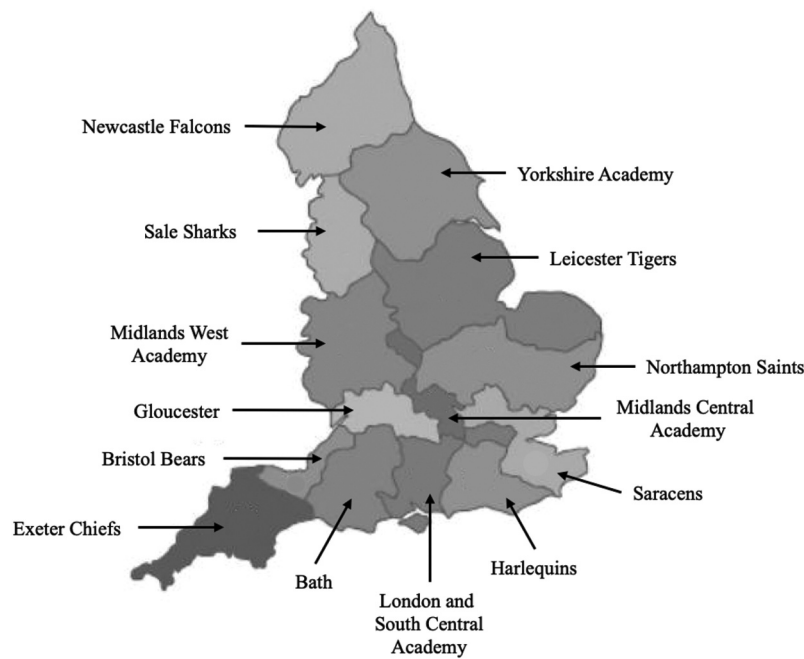


Figure 1. Geographic boundaries of the English RU academies (2016–2024).

talent system highlighted substantial variation between the 14 regional academies (Shelley et al., 2025). Whilst operating under standardised macro regulations, meso level variability points to significant contextual differences between TDEs. As such, English RU provides a case study to consider how levels of the talent system interact to influence practice within individual TDEs. Specifically, this study aimed to explore how contextual factors impact the efficiency and effectiveness of male academy TDEs in English RU.

Methodology

Research philosophy

This study was underpinned by a pragmatic research philosophy with the aim of generating practically meaningful knowledge (cf. Giacobbi et al., 2005). Pragmatic research aims to deepen our understanding of contextual “real-world” processes as opposed to seeking generalised truths (Kaushik & Walsh, 2019), emphasising the need of a meaningful impact on the participants (Corbin & Strauss, 2008). Through investigating factors influencing efficiency and effectiveness, the pragmatic intention of this research was to support policy and to help inform strategic decision making in academy English RU.

Study design

As part of an integrated knowledge translation (IKT) process, this research was underpinned by a collaboration between researchers and “knowledge users” in all parts of the research process (Smith et al., 2023). Through this approach, we sought to engage with individuals within the context of English RU who have valuable insights and the influence to apply and implement research findings (Smith et al., 2023). Towards this

end, there was a need to understand the experiences of academy stakeholders within the English game.

Aligned to the pragmatic orientation and IKT process, we chose to understand the perceptions of as wide of a group of English RU academy stakeholders as possible. As such focus group methodology was deemed to be most appropriate to understand the decisions being taken in practice. Focus groups may also offer different perspectives and greater insight than individual or group interviews (Nyumba et al., 2018). With the researcher moderating group discussions between participants rather than acting as an investigator (Nyumba et al., 2018), focus group format allows the discussions to be participant lead within parameters set by the researcher (Bachtar et al., 2024). In this sense, this data collection format enabled academy stakeholders to identify and discuss key issues pertaining to their academy context, with the first author guiding discussion against the research aims.

Participants

Ethical approval was granted by Dublin City University institutional ethics committee (REC/2022/262). Prior to focus groups, academy managers were informed of the study and invited to participate through a gatekeeper at PRL. Academy managers were asked to review participant criteria and nominate an additional three to seven staff members to participate. Criteria required participants to be involved with academy operations and/or influence on TDE decision making. Following nomination, all prospective participants were emailed with participant information and informed consent. A total of 92 staff members across all 14 academies consented to participate, their roles including academy manager, administrator, coach, strength and conditioning coach, psychologist, physiotherapist, and performance analyst. Focus

groups ranged between 3 and 14 participants (mean = 7 ± 1.96 per academy), with participants having a mean 7.84 (± 2.41) years' experience in English RU TDEs. Participants were anonymised based on their organisation (A-N) and the order of contribution to the focus group (i.e., first to speak at Club A would be A1). Thirteen focus groups were conducted in-person and one was conducted using video conferencing software (Zoom Video Communications, San Jose, California, USA). All focus groups were conducted by the first author between November 2023 and January 2024.

Procedure

The focus group questions were designed in alignment with the study's aims, with the goal of exploring effective practices within academies and identifying the barriers to both effective and efficient implementation. The questions were discussed with all authors to ensure they were clear, relevant and aligned to the research question. Following this, RU talent development coaches, external to the research team, acted as critical friends and reviewed the focus group guide. No significant amendments were made following this step. Each focus group began with a stimulus presentation, delivered by the first author, outlining the academy's conversion rate of players and relative contribution to the Premiership,¹ the academy's expenditure relative to players developed, male population data within the academy boundary, and the number and type of educational institutions associated with the academy. The focus group conversation was guided by the stimulus presentation, with the first author prompting the discussion with a series of standardised open-ended questions, such as "how do you determine your academy is effective?", "what do you consider the most important stage or stages of the academy to be?" and "if there were no rules or regulations, what might you do differently?", that facilitated a rich discussion (Arksey & Knight, 1999). Each focus group lasted between 75 and 106 min (mean = 92.64 ± 8.79 minutes) and were audio-recorded for transcription and analysis.

Data analysis

Reflexive thematic analysis (RTA; Braun & Clarke, 2019) was used to analyse transcriptions. RTA "is about the researchers reflective and thoughtful engagement with their data and their reflective and thoughtful engagement with the analytic process" (Braun & Clarke, 2019, p. 594). Reflecting Braun and Clarke's proposition that coding and analysis can flexibly adopt both deductive and inductive approaches (Braun & Clarke, 2022), a deductive-inductive approach was adopted. Codes were generated inductively into a deductive frame based upon the research question, thereby offering a lens to interpret the data in a top-down approach (Braun & Clarke, 2022; Byrne, 2021). To facilitate deep immersion in the data, the first author read and re-read each transcript several times, taking familiarisation notes. In the second phase, following multiple sweeps of analysis, semantic and latent codes were generated initially by the first author (e.g., 'Consistent intra-organisation messaging', 'Staff spanning between academy phases'). The third phase of analysis involved initial themes

being generated from the codes based upon shared concepts. For example, the aforementioned codes related to organisational vertical coherence. Qualitative analysis software (QSR NVIVO-12) was used to assist in the organisation of data into thematic hierarchies. Each stage of analysis was led by the first author, with all other authors acting as critical friends throughout the analytical process and challenging interpretation of the data, aiming to generate richer interpretations of meaning (Braun & Clarke, 2019; Byrne, 2021).

The fourth phase involved initial themes being reviewed and refined, facilitated by discussions across the research team to consider whether all themes functioned as meaningful interpretations of the data and whether they provided information that addressed the research questions. For example, upon reflection and refinement, and reflecting the non-linear process of RTA, candidate theme "Extent of integration between environments" was developed into two distinct themes. Reflecting this development, code generation and refinement was revisited (Braun & Clarke, 2019). The fifth step involved naming and defining the themes, ensuring that the theme provided a coherent and internally consistent account of the data, as well as choosing representative exemplar data extracts. During this stage, all authors considered the deep analysis of the underlying data of the themes, as such sub-theme names were changed for clarity; for example, sub-theme "Outsourcing" became "Concurrent outsourcing" to better reflect the concept of the subtheme. Reflecting the reflective nature of RTA, the sixth and final phase of the data analysis process involved the writing of the report which was recursive and woven into the entire process of the analysis (Braun & Clarke, 2019).

Reflexivity

To enhance trustworthiness, several steps were taken. Critical friendship was a consistent feature of the research design. Independent RU coaches were used to review the focus group guide and the stimulus presentation. Critical friendship was augmented by participant member reflections and presentation of themes to three RU stakeholder audiences. Academy managers were contacted following the fifth phase of analysis to engage in member reflections based on preliminary theme generation; 10 of 13 academy managers engaged in member reflection discussions, all conducted on Zoom, lasting an average of 31.4 ± 15.21 minutes. All member reflection data were recorded, transcribed verbatim, and data subsequently integrated into the analysis prior to write up (Everard et al., 2023). Member reflections were used to explore and expand upon the findings with academy managers. This process led to further crystallisation of themes and subthemes, and highlighted academy specific nuances. Although all academy managers felt that the themes reflected the overall challenges of the talent system, each participant noted specific ways that these challenges manifested in their own contexts, as well as the context-driven workarounds they had found. For example, one academy selected some EAPs based upon their school to try mitigating integration challenges.

Given the multiple data collection points and the length of the data collection, it was important for the first author to

maintain a reflexive journal which encouraged her to have an embedded and ongoing process of reflection throughout data collection (Braun & Clarke, 2021). As an example, the reflexive journal was used by the first author to reflect on the stakeholder presentations and specifically conversations about the information presented.

Results and discussion

The aim of this study was to explore how contextual factors impact the efficiency and effectiveness of male academy TDEs in English RU. We generated 4 themes and 14 subthemes using RTA (see Table 1). Each of these four themes “Multiple loosely connected concurrent environments”, “System regulations and structure drives practice”, “Organisational influences” and “Searching for bang for buck” are presented below to provide a cogent narrative of the data.

Multiple loosely connected concurrent environments

“Multiple, loosely connected, concurrent environments” represents the nature of player development in English RU, where players experience multiple environments concurrently (e.g., school, academy, international, and loan club). These

environments were loosely connected, with little academy TDE influence.

Rugby coupled to players’ education

Progression was perceived to be significantly influenced by a player’s education, with those players not attending an appropriate establishment perceived to be considerably disadvantaged: “...those who go to a high-quality rugby environment at an independent school, they just completely overtake and kick on. But the lads that stay at state school from 16 to 18, the disparity is enormous” (F4). Reflecting this, academies facilitated players to change schools at age 16: “we’ve certainly tried to guide and direct boys that maybe aren’t at great rugby playing schools ... to some of the better circuits for example, or ACE [club affiliated] programmes” (J3). Resulting fee remission and school scholarship opportunities created tension for both the academy and player: “we like to get our players into scholarship ... But then the schools very much see them as a commodity” (E8). Whilst it was deemed important that players attended schools with appropriate rugby programmes, the use of scholarships were perceived to be a barrier to integration across these concurrent environments.

The significance of school and education environments on player development is in contrast with literature from other

Table 1. Results organised into themes and subthemes and exemplar quotes.

Theme	Sub-theme	Exemplar quotes
Multiple loosely connected concurrent environments	Rugby coupled to players’ education	The main bits are working at U16s, not just from a curriculum point of view, but guiding them to the right places is crucial. If they’re not guided to the right schools, they’re not going to get through. (C4)
	Lots of rugby, just not with the academy	There’s poor links with National League, Championship clubs ... We’re losing a lot of the contact time we have with them here, so there’s some guys that we’ll see on Monday and we won’t see them all week. (C2)
	Differing agendas in different settings	Realistically for them, their goal is not player’s long-term development ... they have to win games. It’s not necessarily the person’s problem. The situation creates it. (I3)
System regulations and structure drives practice	Lack of agency and autonomy	At the end of season of under 16, I’m expected to produce squad of say, 60 players for the RFU festival for two groups, out of academy patch that is, well, 10 times as small as another ... you’re asked to produce the same absolute output numbers. It’s massively challenging. (D3)
	Salary cap regulations promote development	I’d say from a financial standpoint, [effectiveness] is how much can we save the senior cap by populating it with guys who are in the academy, to be able to still hang on to our big name players. (K3)
	Limited time to bridge the gap from academy entry to exit	It feels very fast. So like from the moment I start to identify them at 15–16 to their first major transition in rugby is end of 18 ... It’s like 2 and, 2 years four months really of playing. By having that as a constraint, it shapes how we act and behave. It shapes the conversation, shapes decisions, and at times feels like it’s a race ... it’s still a race to find them and a race to develop them. (C5)
Organisational influences	Competition directs attention Regulated to keep things local	We all talk about being development driven, and competition supports that. (D2) If resources were the same, [academy boundary] was the last thing we [would] want to change ... It would make us vulnerable to the bigger richer clubs. (H6)
	Academy-club integration and opportunities	The backlog of players that might be in the way of young lads coming through, that wouldn’t happen at other clubs. They’re things that are out of our control until you really can try and influence up and help with the direction and strategic planning of the club. (J3)
	Reliance on perception of senior head coach Saturation and opportunity	So like when you had [Ex DoR], for example ... he wasn’t playing young players from the academy ... who you have above I think dictates a huge amount. (I3) There isn’t really an opportunity if someone’s just become an established player and they’re at the prime in their career and they’re fit. They’re not necessarily replaced by someone coming through as an 18–19 year old, unless there’s a continual turnover of senior players ... Players are always coming through the bottom where we believe are good enough. But quite often there might not be the opportunity in that window where they’re at their best chance of making a debut or becoming a professional ... it doesn’t mean they didn’t have the potential to be an outstanding player, there wasn’t the opportunity at that time. (H8)
Searching for bang for buck	Prioritisation of resource	So the club would seem to prioritise the 18s. I suppose that’s what gets the most attention here. That is the kind of top of the pathway and that’s where most of our resources are spent. (G6)
	Concurrent outsourcing	So if you take private schools, they’ve got S&C, medical all on the site ... rather than have to resource that as much, we can grow our relationship ... lean on that. (G8)
	Placing bets	The heavy resource goes when they get older doesn’t it ... we resource them better at 18, we resource them better as EAPs ... we know that they’re statistically less likely to be a punt ... there’s so many of them and they haven’t quite developed yet. You’re not sure where to put resources, so we don’t tend to put as much in. (I3)

sports where clubs or academies are not dependent on other external environments for athlete development (e.g., Larsen et al., 2013). Whilst comparative data between school and academy rugby experiences have yet to be considered, academy-led competitions are proposed to better emulate the physical challenges of senior competition compared to school (Read et al., 2018), with academy training offering better physical preparation for these competitive demands compared to schools (Phibbs, Jones, Read, et al., 2018).

Lots of rugby, just not with the academy

Participants perceived significant challenges when managing player's training load between TDEs. Schools and colleges were the primary source of a player's competition prior to senior rugby. However, it was perceived that some schools' match volume was inappropriate, compromising player development: "it's the quantity ... most of our adaptation comes from off-loading kids because they do too much" (I3). Participants also perceived an inability for the academy to influence school rugby when disagreements arose:

The message does get banded a lot to academy managers: 'use your EAP status', 'bring RFU to the party', 'bring Prem rugby [PRL] to the party' ... it doesn't matter who you bring to the party, schools will do what they want to do. (L6)

As such, to accommodate the number of school matches their players participated in, academies had to adjust their programmes and contact time with players to the reported detriment of individual development: "... it gets more frustrating for us as we're going: 'well don't come to our training then, go focus on your school' ... Where's that Premiership player going to come from?" (E7).

As players progressed to professional level, clubs did not have enough senior academy players to hold inter-academy fixtures. As such, lower-league loan clubs were relied upon to provide match experience for senior academy players, much as is the case across other team sports (Prendergast & Gibson, 2022). However, the uneven geographical distribution and relative locations of Premiership and lower league clubs posed significant challenges for academies. In instances where university rugby was utilised instead, access was again reliant upon a player's educational choices and proximity of a quality university rugby programme: "there isn't really a BUCS [rugby playing] university in around [city]. That's probably one of our challenges. I'd love to have had that over the years" (J3). As such, while the development of senior academy players relied on concurrent environments, this was unequally distributed and differed significantly between regions.

Differing agendas in different settings

Academy staff perceived there to be differing agendas between the player's concurrent environments. They noted that the desire to win in school competitions hindered player development: "they're [independent schools] focused on their fixtures and winning their fixtures. Therefore, you'd argue that the long-term development of those players is negated by that" (B2). This perception is supported by data suggesting a positive relationship between match frequency and training load in

schools, indicating a focus on match preparation over long-term development (Phibbs, Jones, Roe, et al., 2018).

In the senior academy, participants noted the importance of loan clubs as part of the player's curriculum. However, there appeared to be a lack of incentive for these clubs to promote long-term development, instead primarily concerned with winning fixtures. Interestingly, this focus on winning was seen as more developmentally appropriate for senior academy players compared to their younger peers: "[player's] got to go into the Championship, or National One [lower leagues] ... you need to execute X, Y and Z, and that's beginning to look a little bit more like what's expected of you in the senior group" (K3). In the senior academy, exposure to appropriate competition was considered essential for development and participants noted that this was more likely to be accessed through lower league clubs than in university rugby: "[universities] talk about performance, but they don't know what performance is" (C4). This reflects a common heuristic that close games were optimal for player development: "every academy fixture ... we would want to be competitive... I don't think we would define success on whether we were winning ... we always tried to have a longer-term view" (J3). In this regard, there is surprisingly little research that has considered the impact of competition on athlete development, especially towards the transition to senior status (Hauser et al., 2022).

System regulations and structure drives practice

The second theme, "system regulations and structure drives practice", reflects the impact of macro level talent system design and how talent system regulation acted as constraints on academy TDEs and individual player development.

Lack of agency and autonomy

There was a strongly held perspective that standardised system rules and regulations constrained academy operations: "hamstrung by rules that sit in place ... And maybe to be more efficient, you'd have a bit more autonomy on how you do things" (F5). Participants perceived that regulations limited their ability to meet players' needs: "elite coaches are paid to do the job [and] aren't allowed to make that decision" (A5). In another example, based on the "as many as possible, for as long as possible" principle (Erikstad et al., 2021), academies were required to engage more players than some participants believed necessary or practical: "you're forced to keep loads of kids and larger squad sizes at the stage where you don't need to" (I3). This approach also impacted the quality of provision and the ability to select or deselect players at earlier ages:

There is the sort of philosophy ... from the RFU that you shouldn't release the player ... once they're in Under 14 they're through until the Under 16s ... We're trying our best to do it, but ... resources, and also facilities, are limited. How many players can you fit on a pitch? How much session time have you got? (J6)

These rules and regulations appeared to be designed to discourage inappropriately early deselection. Whilst participants understood the intention, when put alongside contact time and other constraints, there seemed to be significant implications for player development: "we are engaging with huge

numbers ... it's more of a stakeholder engagement piece than player development or talent ID" (F3). Participants suggested that inflexible rules and regulations, lacking an appreciation of contextual factors, negatively impacted the academies' efficiency and effectiveness, and potentially the quality of player's developmental experiences.

Salary cap regulations promote development

In contrast, salary cap regulation seemed to positively influence academy effectiveness. Even in clubs with the highest budgets, salary cap regulation was perceived to place greater emphasis on developing players though incentives involving home grown player "cap credits" allowing for increased player salary expenditure. This incentivised clubs to support TDE practice: "by 2026, we want 12 homegrown players ... starting in the matchday 23 ... If we get 12, then we get ... 600 grand worth of cap space" (G5). However, pointing to the unintended consequences of regulations, the salary cap regulation was perceived by non-Premiership academy staff to constrain player progression. This led one academy to purposefully prioritise relatively younger players with greater opportunity to transfer to a Premiership club before their 18th birthday and be included by the "cap credit" regulation: "...we'd have been focusing heavier on Q4's and Q3's ... We didn't feel we could have a ... Q1 birthday and get them signed effectively in that window because clubs weren't signing players [until] later on in the season" (E2). This provides an example of how macro policies (e.g., PRL salary cap regulations) may differentially impact meso organisations (e.g., RFU academies and Premiership academies), may impact player progression, and are consequential for individual micro level practice within a TDE. As such, macro regulation can only be part of any approach to enhancing practice in TDEs.

Limited time to bridge the gap from academy entry to exit

English RU has systemically mandated late selection policies, with academy selection typically beginning at U16. There was widespread approval of delayed selection: "does rugby need to start at 12? No. Does rugby need to start at 16? Yes ... We're a late developer sport" (N8). Whilst delayed selection mitigates against some of the challenges associated with early identification (Bailey & Collins, 2013; Till & Baker, 2020), the limited time within a TDE poses a challenge for academy and player to bridge the gap between junior and senior performance:

You look at any other sport, any other academy - swimming, football, athletics, even drama, dance, music ... they would have far more contact time with their athletes and performers than we do. We're once a week, sometimes twice a week. (J3)

In addition, based on UK law, senior academy players must be paid, thus increasing the resourcing needs of clubs, limiting the number contracts offered, and increasing the jeopardy of non-selection. Whilst national legislation is beyond the scope of the talent system governance, in this instance, it is important to acknowledge how it acts as a constraint on academy TDE practice, particularly in respect of other countries and their approach to professional status of players.

Competition directs attention

Participants perceived macro organisation facilitated competitions, such as the academy league, to be vital in developing athletes towards elite performance. The prioritisation of resources between age-grades was reported to reflect the competition calendar: "the U18s have more games than any of the others, so they naturally get more attention because we have to spend more time with them purely because of the amount of fixtures" (A2). Some academies, and individual members of staff, considered U18 league performance to be indicative of academy effectiveness: "use that [U18 fixtures] as a benchmark to see how effective we are at producing those players of that quality" (J4). The U18 league was also deemed important for individual player development: "it's going to pretty much determine who gets contracts, where they get contracts, if they are going to be offered a university scholarship" (I5). The greater resourcing at U18 was partially achieved through increasing contact time with players: "we want them to access us twice a week to be ready for [the] academy league" (E8). As such, competition influenced distribution of resources and encouraged investment. The lack of post-U18 competition meant fewer players were offered senior contracts: "the lack of second team opportunities that PRL were unable to provide us ... we didn't need that surplus of squad players" (A3). As such, macro organisation facilitated competition influenced meso level selection policies and limited player development opportunities.

Regulated to keep things local

Participants perceived that their academy effectiveness was limited by their geographical boundary, specifically the talent pool within their area and the number of rugby-playing schools: "if you haven't got [that] level of player ... I think we're effective based on the resources at [our] disposal" (M2). There was also an acknowledgement that without boundary regulations academies would search for players nationwide, illustrating how the intention of this regulation actively encourages local investment and prevents competition for young players (Till et al., 2020). Academies speculated that without the boundaries it would be a "race to the bottom" (G3) to scout the best players. Academies noted that national scouting would have resource ramifications: "you'd probably spend the majority of your time having conversations with those players, parents, whoever, to keep them on side as opposed to actually looking at their development" (L6). As such, the constraints of an academy's boundary influenced player selection, but created resourcing implications: "every academy is so paranoid of missing someone and you cast the net wide and go 'well, we'll just scoop them all up'" (F4). As such, boundary regulations were not only perceived to be adaptive for recruitment, but also for TDE practice.

Organisational influences

"Organisational influences" considers the organisational factors contributing to, and constraining, academy effectiveness via the progression of players through the different stages in the academy-club's system.

Academy-club integration and opportunities

Vertical integration, the connection of working practices across organisational levels (Taylor & Collins, 2022), was perceived to impact academies' effectiveness in developing elite players. Shared goals throughout a club's organisational structure seemed to encourage integration: "there's been a far greater emphasis from the board [of directors] ... of having 50% or more of the senior squad homegrown ... that's also got to be linked with having a successful first team" (F3). Shared goals also seemed to influence organisational behaviour, facilitating collaboration between the academy and the senior squad staff, positively impacting player development. Without these shared goals, non-Premiership academies struggled to make sense of the outcomes of their practice: "if you can tell me what they [the RFU] want then you'd be a better person than me" (J2).

Vertical integration between academy and senior club appeared to be a function of the club's strategic direction and senior squad resourcing. Where financial restrictions prevented clubs from importing established senior players, academies were perceived to be more prominent in the club's organisational structure: "in the position that we're in now, we would be relying on more younger players ... Whereas back then we had a large mature squad, so there wouldn't have been many opportunities" (H4). Otherwise, it was speculated that clubs with greater financial resources and budget within the salary cap may rely less on their academy: "we don't have to rely on [the academy] because we have the financial backing within the salary cap to not" (M3). Whilst talent development is essential for sustainability (Martindale et al., 2007), the business of professional sport may motivate a cost-benefit consideration of TDE investment against buying established senior players.

Reliance on perception of senior head coach

There was a perception that player progression depended on the perceptions and developmental approaches of those appointed to strategic leadership roles within the club: "if the head coach said: 'I don't want local players, I want to buy all these players from the rest of the world' ... you can put in all the investment you want, but ultimately they've been blocked" (N10). Misaligned expectations of newly contracted senior academy players were also perceived to hinder progression: "senior coaches, first day of preseason, they've judged half of the academy lads ... it takes them a long time to get rid of that first impression" (H4). Amongst some focus groups, there was a perception that senior coaches were impatient for players to progress, leading to inappropriate judgements of their future capacity (Taylor & Collins, 2021).

The senior squad's performance was perceived to influence senior coaches' willingness to select developing players: "if you've got an incredibly successful European winning trophy team, Premiership winning trophy team, that team is harder to get into ... than someone that's sitting 10th, 11th every year" (B2). However, there was also a strong perception that long-term club success required senior coaches to facilitate opportunities for developing players. In this regard, it was notable that participants did not reflect on strategies to accumulate senior elite playing experience. Whilst the literature on junior to senior transitions largely focuses on the coping skills of athletes

(e.g., Stambulova et al., 2007), there seems to be little insight into *how* TDEs introduce players to first-team squads.

Saturation and opportunity

In addition to the challenges of making the junior to senior transition, participants suggested player progression was potentially impeded by competition in specific positions and the resourcing needs of multiple players: "there was a cohort of young academy kids that came through that stuck together, that did make it harder to break in" (K3). When multiple players progressed at a similar time, this had resourcing implications in terms of coaching staff from offering enough resource, coaching time, and attention to individuals. This was exacerbated by differing positional demands, with some positions described as requiring more time and coaching resource to prepare for the demands of the senior game: "position wise, like props ... they're not getting those opportunities in the first team for a lot longer ... a back three player ... is going to have much more opportunity" (G3). The opportunity for progression was made significantly harder by the well evidenced gap between junior and senior performance (Argus et al., 2012; Cunningham et al., 2016). Transitioning academy players were now competing with established elite senior players for their place in the team: "you had to be an international to play in that backline and if you weren't, you weren't [selected]" (L5). As such, their relative inexperience compared to other players made it difficult to gain experience. This 'chicken and egg' type situation meant that players needed playing opportunities to enhance their performance but couldn't get opportunities without enhancing their performance.

Searching for bang for buck

Academies had finite resources (i.e., time, attention and finance) and employed various strategies to efficiently use resources while maximising effectiveness. Notably, participants perceived TDE practice would always be resource constrained, as such 'best practice' may not necessarily be achievable.

Prioritisation of resource

Participants reflected that whilst every stage of the academy was important for player development, limited resources required prioritisation: "you can't do everything and you can't do everything all at once. So it's like what's the most important thing at that time for their age and the stage of their journey" (C5). U18 players were relatively more resourced than other age-grades to prepare them to transition from the junior academy and for the competitive demand of the U18 academy league. Conceptions of RU as a late selection sport also seemed to influence resourcing: "we see this sport as a late developing sport, so you wouldn't put loads of resource at the bottom if that's the case" (C4). However, participants reflected that the relative lack of earlier investment may lead to later issues: "you get to under 18 and [it's] almost like we're curing or preventing a lot of problems" (D3).

At the micro level, to mitigate against the resourcing challenges of the context, individual players perceived as high potential (EAPs) were prioritised: "we get more

opportunity to develop the relationship. Rather than giving them [EAPs] more, we just have more opportunities for them" (K5). Staff reflected knowing which players to prioritise helped manage their limited attention resource: "at some point you have to prioritise ... to an extent it's easier to have EAPs so you know who to prioritise" (F9). However, participants reflected the need to develop full squads of players to support and challenge the development of high potential players (Baker, 2022): "it would be hard to find that next professional player and develop them without the rest of the guys there ... you do need those supporting players and not just identify the one guy that's going to make it" (H4). Yet, the macro level policy solution of EAP prioritisation seemed to reflect a misplaced confidence that it would be possible to identify those players who would make future progress (Shelley et al., 2025).

Concurrent outsourcing

Despite the perceived impact on the quality of player experience, participants deemed outsourcing elements of player development to concurrent environments (e.g., schools and loan clubs) had resource benefits. There was a perception that outsourcing was essential to the functioning of the overall system: "we need the schools, the colleges, the loan clubs ... We haven't got the resources to play lots of games, to do all the coaching, to do everything" (B1). Participants also noted how outsourcing was contingent on the quality of the provision and the extent to which the academy could trust the provision and the alignment between concurrent environments. This was most commonly perceived to be the case in strength and conditioning (S&C) and physiotherapy support: "the S&C coach [at school] will personally develop these athletes in alignment with what we're asking ... That actually then allows me to give other players resource" (C6). However, the benefits of outsourcing were not reflected by perceptions of coaching at any stage of the system. Academies relied on networks of volunteer coaches to facilitate the pre-academy programme (DPP). Often, it was perceived that these coaches had "no idea of the bigger picture" (H6) despite the important role they played in establishing the "foundation of the academy" (J3). There was also a perception of limited alignment or integration between academy and school rugby coaches: "we actually are trusting, for wanting a better word, the school to be aligned loosely enough with what we're trying to get from the player point of view to actually deliver that development" (H6). Whilst outsourcing was necessary given systemic constraints, it was seen to limit academy TDE practice.

Placing bets

There was a sense that academies delayed providing individualised development until a player's progression post-U18 was more likely. This was evident in the EAP nominations, and provision of more individualised resourcing. Many academies delayed EAP selection until the U18 season: "if we're going to EAP someone early, so before the under 18 year ... they need to be someone who is outstanding" (H6). Many participants reflected on the importance of certain positional requirements,

describing placing bets based upon anthropometric characteristics: "you can't coach someone to be 6 foot 5" (N9). Given the weak link between junior and senior performance (Güllich et al., 2023), delaying investment may allow coaches and practitioners to be more targeted and invest limited resources in players more likely to progress. However, decisions on when to invest in individual players would seem critical to development and progression (Shelley et al., 2025).

General discussion and applied implications

The aim of this research was to explore how contextual factors impact the efficiency and effectiveness of male academy TDEs in English RU. Academies considered effectiveness through the lens of players progressing to the elite level, their ultimate performance level, and the holistic development of players. In terms of efficiency, as reflected in system and academy conversion rates,² the results suggest that macro and meso efficiency is inherently limited by the combination of regulations mandating large junior cohorts and the bottleneck imposed by senior academy selection. In the case of English RU, it appeared that practice at every level was shaped by the context of the system, very often acting to limit academy TDE effectiveness.

Macro level organisations shape the context and practice of TDEs at the meso level through regulation. As such, to address contextual challenges whilst being centrally governed, it is the challenge of the macro organisations to develop and implement system-wide rules and regulations that promote good practice, whilst allowing TDEs the autonomy to adapt to their specific context (c.f. Sotiriadou et al., 2017). In this case, rather than raising standards, participants perceived regulations to be overly constraining and often leading to maladaptive consequences for player development. Thus, in their current format, the regulatory constraints of English RU do not allow for consistently effective practice in academy TDEs.

From a theoretical perspective, TDE research has focused on contexts where there is a singular coaching environment (Henriksen et al., 2010a, 2014; Larsen et al., 2013). Whilst offering an appropriate lens, it does not reflect the context of TDE practice in English RU, and therefore there is a need for greater focus on the social circumstances of talent system research (e.g., Gavin et al., 2024; Vaughan et al., 2022). Where it is the case that athletes train across multiple concurrent environments, there is a need to understand how all TDEs act to shape coherence of an athlete's curriculum (Taylor & Collins, 2022). In addition, whilst the integration and collaboration between multiple organisations (Mathorne et al., 2021; Mathorne et al., 2020) and stakeholders (Pankhurst et al., 2013; Taylor, Collins, et al., 2022) has been considered, there is growing recognition of its centrality to TDE practice. Whilst it has been suggested that shared understanding would be considered good practice between collaborating organisations (Mathorne et al., 2021), there remains little research to guide how a TDE might develop this shared understanding. Mathorne et al. (2020) highlighted the collaboration between organisations aiming to promote athlete development was enhanced

by the organisations coming to a shared formal operating agreement. In the present context, this would require academies to take an active role in the formation of multiple formal agreements with numerous schools, clubs and colleges, something that is practically unfeasible under current regulation.

Whilst research into TDEs has considered what features characterise effective or ineffective environments (e.g., Hauser et al., 2022), relatively little research has considered how these features may be influenced by resources. Henriksen et al. (2010a) noted that an inadequacy in resources leads to compensation in operations. Yet, it would seem to be the case that resources, be they time, attention, or finance, will always be limited. In this study, resource constraints shaped academy TDE practice and the norms of the macro system, with the academies adapting practices to achieve institutional goals whilst striving to invest limited resources efficiently. Whilst all academies compensated, it is likely they compensate to different extents in different areas based on specific contextual challenges. In this sense, there is greater need for the context of the TDE to be seen through different systemic lenses when considering recommendations for TDE practice (Sweeney et al., 2023).

Limitations

It should be acknowledged that the results and implications of this study may be limited to the English RU context, which, as results indicate, is a relatively unique talent system. Whilst there may be similar elements between English RU and other sports or nations (e.g., multiple academy structure), comparisons should consider potential differences between contexts (e.g., degree of professionalisation, age of selection etc.). As such, findings may not be transferable to other sports or national contexts. The results of this study are only from the perspectives of the regional academies; the perceptions of other stakeholders in the concurrent environments (e.g., schools, loan clubs), and of the macro system organisations (RFU and PRL), were not considered. Future research can support practice by generating greater understanding of the influence the other TDEs and how the network of environments impact player development, and may seek to consider the perceptions of additional player stakeholders.

Conclusions

The efficiency and effectiveness of the English RU academies were influenced by several overarching contextual factors, including the significant reliance on TDEs external to the talent system, macro system rules and regulations, and integration with Premiership organisations. The resource allocation strategies of TDEs has received little research attention. This study has highlighted several strategies adopted by academies to alter their practices in response to the challenge posed by limited resources. The findings reveal a complex, multifaceted interplay between the macro, meso and micro levels of the talent system. The interaction of standardised system regulations with TDE specific context at times led to unintended, maladaptive consequences for player development. Whilst

research can often be concerned with identifying 'best practice' to optimise talent development, as this study demonstrates, what is practically deliverable is inherently constrained. Taking into account the macro level lens applied, talent development may therefore be viewed as a complex challenge which has no stable solutions, but rather more or less optimal trade-offs (Sowell, 2007). Our results suggest that the constraints of the English RU talent system, whilst offering a number of good practice recommendations, prevented consistently effective practice in academy TDEs. We suggested that the design and guiding policies of the English RU talent system should be reviewed with the inherent tensions related to efficiency and effectiveness considered. As part of the co-production nature of this work, this research has already impacted practice on the pathway.

Notes

1. This data is reported in Shelley et al. (2025)
2. Reported in Shelley et al. (2025)

Disclosure statement

Authors N.M and B.J are employed by Premiership Rugby Limited.

Funding

This research was conducted with the financial support of Premiership Rugby Limited, and Science Foundation Ireland [12/RC/2289_P2] at Insight the SFI Research Centre for Data Analytics, Dublin City University.

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Ethics approval statement

This study has been reviewed and approved by the Dublin City University Research Ethics Committee. Reference: DCUREC/2022/262.

Author contributions

All authors contributed to the conception and design of the study. A.S performed data collection. A.S, Á.M, S.B and J.T performed the data analysis, with all authors reviewing the analysis. All authors contributed to the writing of the manuscript.

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