

Hedge Trimming or Tree Felling? Context and Systemic Factors in Talent System Recruitment and Selection Decisions

Ian Costello^{1,2}, Jamie Taylor^{2,3,4}, Áine MacNamara²

¹Munster Rugby, High Performance Centre, University of Limerick, Ireland

²School of Health and Human Performance, Faculty of Science and Health, Dublin City University, Ireland

³Insight SFI Centre for Data Analytics, Dublin City University, Ireland

⁴Grey Matters Performance Ltd., Stratford upon Avon, England

Correspondence: Ian Costello, ian.costello3@mail.dcu.ie

Abstract

Decision making related to the future potential of athletes has become a significant area of research attention. Talent selection decisions in sport are considered complex, highly nuanced, and influenced by a multitude of factors. The purpose of this study was to explore individual and systemic factors influencing talent selection decision making in team sports. Twelve experienced recruitment professionals, across three professional male team sports, participated in semi-structured interviews. Findings suggest that organizational and contextual factors influence both individual judgements and the wider selection process. These factors are considered through micro (individual), meso (organization) and macro (system) lenses. There was an appreciation that not all selection decisions are the same, carrying different degrees of uncertainty based on the stage of the talent system. The context of decisions varied between systems, with a variety of processes being used to manage the inherent uncertainty of selection. In addition, systems aimed to reduce the consequences of “non-selection” and reduction in the use of “one-off” selections. Because of this complexity, there is a need for research to consider the wider system in which selection decisions are taken. In practice, we suggest that talent systems are shaped in a manner that encourages more “hedge-trimming” type decisions (allowing for continuing opportunity), rather than “tree-felling” (in or out) decisions.

Keywords

talent development, talent identification, decision making, expertise, high performance

Introduction

Decisions related to selection are a critical part of any high performance or talent system. Given the complex and typically non-linear journey to high performance, the ability to make predictive decisions about the distant performance potential of young athletes is highly limited (Abbott et al., 2005; Baker et al., 2018). This is especially so when long-term predictions are made based on current performance (Johnston et

al., 2018). Despite this understanding, early talent identification (TID) and selection remains prevalent in some contexts. This is perhaps shaped by wider social and cultural factors (Røsten et al., 2023) or is a result of systemic pressure and resource allocation decisions in talent development (TD) systems (Sweeney et al., 2021). To this end, TID research consistently highlights the limitations of early

selection (e.g. Bergkamp et al., 2022), especially when underpinned by a deterministic assumption that an athlete's future performance can be predicted by their current performance (Güllich & Barth, 2023). More recent literature (e.g., Morganti et al., 2023) has pointed to alternative approaches, such as probabilistic reasoning, which suggests the potential for TID to be responsive to what an athlete *could* become, i.e. the interdependence of selection and development, influenced by socio-cultural, individual and environmental factors. This is reflective of the notion that talent is emergent, dynamic, multifactorial and symbiotic, rather than static or immutable, and is based on both individual and environmental factors (Baker et al., 2019).

Despite this recognition and decades of research pointing to the fallibility of TID (e.g., Johnston et al., 2021), there have been limited investigations of the processes recruiters undertake during the selection process (e.g., Larkin et al., 2022). To this end, the notion of the “coach’s eye” has been developed to reflect what have been characterized as the intuitive, subjective, and experience-based inputs of coaches in selection (Lath et al., 2021). Human inputs to selection decision making have tended to be characterized as intuitive, rather than considering the more deliberative features of thinking alongside the intuitive (cf. Klein et al., 2006). A naturalistic decision-making approach (NDM) suggests that intuitive decisions are enhanced through the experiential development of tacit knowledge and richer mental models (Klein, 2015). In addition, research has largely focused on evaluating the accuracy and reliability of identification decisions (e.g., Schorer et al., 2017). Indeed, much existing literature has been conducted under the heuristics and biases decision-making paradigm which has been critiqued as focusing on the more flawed features of human decision making (e.g., Gigerenzer, 1996), rather than on skilled performance and expertise. This is not to cast doubt on the limitations of making long-term TID predictions; however, if selection decisions are highly nuanced and informed by knowledge acquired through extensive experience and

formal education (Roberts et al., 2021), there is a need to consider how these decisions happen in context. Central to all talent selection decisions is the judgement of the individual actors. As suggested by Johnston et al. (2018), there is minimal evidence with which to inform complex selection decisions in TID and how people make judgements about the future success of an athlete. Who is selecting talent can be considered as important as what is being identified (Johnston & Baker, 2022b). However, the process by which these qualities are assessed (i.e., the “how”) has been largely absent from the research (Jones et al., 2020), and few researchers have attempted to study how knowledge plays a role in decision-making (Larkin & O’Connor, 2017). Similarly, there is also a need to understand the sources of information (e.g., game observation, video footage, interviewing players, and reference checks) used to inform selection decisions (Larkin et al., 2022).

The literature in this field has also tended to examine selection decisions as discrete moments in time, with the notion of “talent wastage” associated with selection decision-making errors where athletes are wrongly selected into or deselected from a team or pathway (Pinder et al., 2013). Johnston and Baker (2020) expanded on this, suggesting that talent wastage is connected to poor predictive capabilities, a lack of understanding of what talent is and the way it manifests, cognitive biases affecting human judgment, and situational factors affecting the quality of decisions being made. By classifying selection errors as being type 1 (false positive) and type 2 (false negative), there is a sense that selection decisions are final and binary. Where this is the case, for individuals and organizations, perceived errors will have significant consequences which are magnified by the limited resources at an organization’s disposal. A multitude of selection points in sport present this type of binary decision; for example, North American sports’ draft system (Johnston & Baker, 2022b). This type of binary decision may not always be as strong a feature in other contexts, especially in professional team sport

academies, where retain or release decisions are likely to take place over a period of time. This is the difference between what Klein (2022), referred to as “tree felling” and “hedge trimming” (p. 357). Tree felling is a binary decision, from which there is likely no turning back (e.g., the NFL draft), whereas hedge-trimming decisions are subject to continuous updating and reduced risk of error. Hedge-trimming type decisions are influenced by constantly updating new information related to a player, or their specific context, where staff can adjust and adapt their predictions based on feedback throughout the development process.

Taking account of these decision types, Klein’s recommendation was that in the absence of the ability to make slow incremental updating decisions, more classical decision approaches such as those suggested by Kahneman et al., (2021) are more appropriate. These processes focus on the mitigation of bias and reduction of noise, Kahneman referring to the former being considered consistent error and the latter as variability in human judgement. Noise, in a talent selection context, might refer to a number of selectors who, despite all factors being even, reach different predictions about the future prospects of a player. These strategies are increasingly recognized across the literature, with selection decision making increasingly viewed with a more Bayesian lens, where the decision is based on probability of a successful outcome, using prior information and new evidence or data (Baker et al., 2019).

As a result, in addition to considering the type of decision, there is a need to consider the context of a decision and the conditions in which selection decisions occur, especially as these decisions may be based on contextual demands and broader objectives beyond an athlete’s perceived future potential (Johnston & Baker, 2022a). Systemic factors such as the system structure, levels of resourcing, quality of staff, and the principles and practices of the talent system can influence who is selected and when and how decisions are made. As an example, selection decisions can be constrained by opportunities at the senior level. Taylor et al. (2022) refer to micro, meso and macro levels as

lenses to consider the application of strategy in a talent system. The micro level concerns the individual interactions of daily practices such as individual judgements regarding selection. The meso level represents a collection of micro systems in the form of a single organization, academy (Martindale et al., 2005; Mills et al., 2014), or talent development environments (Henriksen et al., 2010; Hauser et al., 2022). The macro is the wider system in which micro/meso interactions take place and is under the influence of a governing body, national, or international sporting systems. This means that depending on the circumstance, talent selection can be influenced at the micro level (the judgements of individual actors), meso level (systems and processes of an individual organization), and macro (resource allocation and policy).

Consequently, there is a need to consider how existing talent system contexts influence decision making at the point of selection. Based on the desire to investigate these contextual differences, professional male team sport is an appropriate environment in which to understand these types of decisions as it has a history of developed practice related to talent selection decision making. Based on this need for ecologically valid grounding, this study aimed to explore how team sport talent selection decision making occurred and examined the contextual factors that influenced the process.

Method

Research Philosophy and Design

A pragmatic research philosophy underpinned this research, aiming to generate practically meaningful knowledge that can develop practice (Giacobbi et al., 2005). Rather than holding a specific ontological perspective, pragmatism is concerned with deploying an appropriate research methodology relative to the research question. In line with a pragmatic approach a qualitative study was chosen, with data collected using semi-structured interviews, allowing for a deep examination of participant’s beliefs relating to talent selection and those of their organizations. The aim of the research is to

interpret a practical problem, rather than form an absolute representation (Kelly & Cordeiro, 2020). By exploring the experiences of talent selectors across multiple sports, we aim to generate a breadth and depth of understanding of findings grounded in real-world experiences. This allows for a deeper examination of the data by the researchers and making sense of the findings by relating them to applied experiences (Bryant, 2009).

Participants

A purposeful sampling criterion was used to identify experienced talent selectors across three professional sports. Based on the need to understand the systemic factors involved in selection, there was a need to sample from sports with well-established talent development systems. Thus, three male professional sports were sampled (rugby union ($n = 4$), cricket ($n = 4$) and soccer ($n = 4$)) to ensure a rich account of how selectors make complex talent decisions across multiple sports and multiple environments. Each of the individual sports exhibit different selection practices, specifically related to age and stage of selection. Traditionally, in soccer, selection decisions are made when players are at a relatively young age. This is in contrast to rugby union, where

decisions are made much later and post adolescence. Cricket sits between soccer and rugby, as selection decisions generally take place slightly earlier than they do in rugby. Multiple selection systems are employed across sporting organizations highlighted by the variation that was evident in the current research, related to *when* decisions were made (age, stage, and how many decisions), how decisions were made (the processes employed to support decision making), and who is involved in the decision-making process (the number and background of selecting decision makers).

Rugby union participants were employed across three National Governing Bodies (NGB) and one English Premiership club. Soccer participants were employed across two category 1 and one category 2 academies, with the fourth participant employed by an NGB. Cricket participants were all employed at professional county cricket level. The participants (all male) were recruited based on employment in key talent selection and recruitment positions, and extensive experience ($M = 9.4$ years, $SD = 3.25$). The study protocol was approved by the authors institutional research ethics committee XXXREC/2023/001. All participants, who were contacted via email, decided to take part in interviews and completed informed consent.

Table 1. Participants

Participants	Sport	Experience (years)
Selector 1 (S1)	Rugby Union	10
Selector 2 (S2)	Rugby Union	12
Selector 3 (S3)	Rugby Union	12
Selector 4 (S4)	Rugby Union	6
Selector 5 (S5)	Soccer	16
Selector 6 (S6)	Soccer	11
Selector 7 (S7)	Soccer	11
Selector 8 (S8)	Soccer	6
Selector 9 (S9)	Cricket	7
Selector 10 (S10)	Cricket	10
Selector 11 (S11)	Cricket	7
Selector 12 (S12)	Cricket	5

Procedures

Data were collected via semi-structured interviews conducted by the first author and scheduled at the participants' convenience. Due to the geographical spread of participants, the Zoom platform (Zoom Video Communications Inc., San Jose, California) was selected, offering logistical benefits to both researchers and participants (e.g., syncing schedules in professional sport; Archibald et al., 2019). To shape the interview, a semi-structured guide was developed including probes and follow up

questions to clarify and expand on the participants answers (Smith & Sparkes, 2016). The interview guide was jointly developed by the research team, all of whom have significant TD experience across sports, both in practice and as researchers. A pilot interview was conducted with an experienced talent selection practitioner to refine the interview guide, which resulted in changes to the structure of the interview and modifications to the prompts and probes. Interviews lasted between 45 and 68 mins ($M = 57$).

Table 2. Interview Guide

Question
1. Could you introduce yourself and provide an overview of the work you have done in talent pathways?
2. What characteristics & behaviors do you look for when you identify & select players into your environment?
3. What factors do you consider when making a decision? What sources of information do you use?
4. Does your organization influence your selection decisions? If yes, how?
5. Looking back over your career, what are the biggest mistakes you feel you have made when identifying and selecting players?
6. Could you tell me about a player that didn't realize the potential you thought he had? Why do you think that happened?
7. Could you tell me about a player that you feel overachieved in terms of potential you thought he had? Why do you think that happened?

Data Analysis

All interviews were transcribed verbatim and checked for accuracy against audio recordings. Analysis was completed using a Reflective Thematic Analysis (RTA) approach, which was considered both epistemologically coherent and appropriate to explore, in depth, the factors influencing decision making in the participant's context. RTA recognizes the researcher's experience and values, because being a resource in the process of analysis and theme generation occurs through active engagement with the data (Braun & Clarke, 2019). Based on the pragmatic underpinning of the research, thematic analysis is also considered highly appropriate in enabling the translation of findings to implications for practice (Sandelowski & Leeman, 2012).

Analysis was conducted utilizing the six phases outlined by Braun and Clarke (2019) which promote a reflexive and flexible approach to the phases of analysis. All phases used NVivo

version 14 as a tool to support this flexible movement between stages. The first phase involved the first and second author becoming familiar with the data, reading and re-reading transcripts, highlighting and annotating areas of interest. Second, coding was conducted on a surface (semantic) level, followed by generating latent codes with the first author capturing underlying meaning (Braun & Clarke, 2019). Codes were then organized into initial themes through an active and interpretive process (Braun & Clarke, 2021). This step entailed significant involvement of the second author, acting as a critical friend in questioning the shared meaning of codes. This involvement led to a joint process of review and refinement of themes to ensure coherence with the overall data set (Braun & Clarke, 2019). In the fifth stage, iterative steps were taken to finalize the definitions and naming of superordinate themes and the sub themes. The final stage of analysis involves the writing up of findings which are presented below.

Trustworthiness

Given the importance of credibility and trust, the first author aimed to develop a level of rapport with participants prior to interview through email and phone exchanges (McGrath et al., 2019). The first author's position in a similar role within a professional sports enhanced credibility and rapport and may also have increased the likelihood of participant openness. The first author has eleven years professional coaching experience and eight years working in various capacities in rugby union talent systems. Following the six-phase RTA process, member reflections were utilized, which involved sending all participants a tabulated form of the final themes to seek their reflections of the themes generated (Smith & McGannon, 2018). Participants were encouraged to share reflections with further comments or any additional information or experiences that they felt were relevant to share. These reflections were used to add to the overall richness of the dataset and were integrated in the main body of analysis. An example is selector one commenting on the impact of frequent staff turnover on the organization's shared decision-making processes, a result of less expertise among individuals and less shared understanding.

Throughout data collection and analysis, the first author kept a reflexive journal to reflect participants' experiences related to selection and the researcher's positionality as a relative insider (Dwyer & Buckle, 2009). The reflexive journal was used as an audit trail and to critically reflect on the research process, data collection, and analysis. This augmented trustworthiness both through deep engagement with the data and reflection of the first author's interpretation of participant experience (Finlay, 2006; Patton, 2002). Importantly, the reflexive journal was used to examine the first author's personal assumptions, a step that was particularly important given their experience and professional role. This was not used to control positioning but instead to reflect on presuppositions, experiences, and overall rationale. Further, the second and third authors, who are both experienced qualitative

researchers, acted as critical friends throughout (Shaw, 2010; Braun & Clarke, 2022). Finally, the selection of participants from three different professional sports, working across many different environments, was done with the intention of addressing the transferability of the results.

Results and Discussion

The purpose of the study was to explore how decision making in team sport talent selection occurred and to examine the contextual factors that influenced the process. Data analysis generated three superordinate themes: (1) micro level factors, representing the judgements of individual actors; (2) meso level factors, how the systems and processes of an individual organization influenced selection, and (3) macro level factors, how resource allocation and policy at the national level led to specific decision processes. The developed themes, and sub themes are presented in Tables 3, 4, and 5.

Micro Factors That Influence Individual Judgments

The first generated superordinate theme concerned the micro level factors that influence individual judgments in the process of talent selection, relating specifically to the judgement of specific actors. The subthemes were the education and experience of the individual actors and working in complexity (see Table 3, p. 81).

Education and Experience of Individual Actors

While aware of the limitation of their individual capacity to make predictions, participants perceived that over time their individual contribution to selection decisions was significantly enhanced. This perception was the result of deliberate steps taken by participants in their own education and development, alongside the accumulation of experience, and reflection on this experience. This combination of knowledge forms and experience was perceived to be a core feature of enhanced decision making (cf. Klein et al., 2006). As an example,

participants reflected on early decisions made in their careers and how errors in judgment perceived to stem from a lack of knowledge about the difference between current performance and future potential (Baker et al., 2018):

When I reflect on my decisions I made early in my career I was looking at players based on current performance and didn't have an understanding of how that linked to potential because I didn't have experience at the top end of pathway. The critical bit is that the longer I was exposed to the senior game, I had a reference point for how I could look at an individual relative to that. Having that reference point was critical (S4).

Indicating the complex interaction between knowledge and experience, participants discussed how these perceived errors acted as catalysts for reflection and how they sought *declarative knowledge* to support the evolution of their selection beliefs and enhance their selection practices:

You come to the conclusion, when you've mucked up a couple of times, that "what you see isn't what you always get." So that's what drove me into the research and exploring the dynamics of human development, ultimately, because I couldn't believe how some people presented and how quickly they changed (S3).

This process of developing declarative knowledge was perceived by the participants to enhance more intuitive selection judgements (Klein, 2015). S11 reflected on how they "built up a sort of *experiential knowledge* base of what you instinctively understand to be true of those that will transition." As selectors accumulated experience, initial judgements made about individuals were perceived to be "very much implicit, intuitive decisions around players on the basis of feel and understanding of previous experiences" (S2). Notably, for all participants, there was a sense of the fallibility of this knowledge and the limitations of drawing on

individual personal experience when "those previous experiences inform the prediction of future potential" (S1) (cf. Johnston & Baker, 2022b). This acknowledgement of fallibility seemed to influence a conscious, deliberative auditing of their judgement using different techniques and processes.

Working in Complexity

Against the need for greater understanding of the information and processes used to inform selection decisions (Larkin et al., 2022), participants outlined a variety of techniques and processes used to gather information and deliberatively consider judgments (Johnston & Baker, 2022b). Participants highlighted the use of both objective and subjective *sources of information* to inform judgements (Roberts et al., 2019), with objective data often used for development rather than selection purposes: "we use data once the players are actually in the building as a source to improve rather than as a source to make [selection] decisions" (S11). Selector nine provided an example of blending the various data sources to "build a powerful case" to support their talent selection decisions:

There is a blend of both subjective and objective data, which involves both your senses and experience telling you this kid will hold up from a skill point of view and from a character, personality and behaviour point of view (S9).

Participants discussed the collection and use of anthropometric and performance data across talent systems. Yet, they expressed significant caution of the interpretation of objective data, especially if seen as a means of "debiasing" the selection process:

So I think it's more a case of how we can utilize this information to make sure that whatever we do next, has a positive impact on the player, rather than utilizing it on the basis of whether you're in or you're out (S3).

Utilizing data as a development tool in this way is supportive of using data to 'hedge trim' rather than 'tree-fell' (Klein, 2022). That is, decision making was enhanced by continuously updating

information, rather than deselection on the basis of a data point, or performance in a single trial. This seemed to reflect a heightened appreciation of the multifaceted and emergent nature of talent (Baker & Wattie, 2018), that enabled selectors to become more comfortable dealing with uncertainty: “I’ve learned much more to live in the grey, I’ve learned much more to hedge my bets” (S1). Supporting the need to manage complexity and uncertainty, many participants discussed something akin to a probabilistic approach (Morganti et al., 2023). Aligned to the more deliberative and less intuitive auditing of decisions, participants perceived the need to continuously update their view of an athlete over time, using more information and data to inform the selection process: “these decisions need to be made around a player’s capacity to develop further and how much room you can give that person to do that over the next 3–4 years” (S3).

Participants also reflected on the *changing of information weighting over time*, emphasising the contribution of particular data sets over others when making talent selection decisions. Participants attached greater weighting to a range of subjective data, based on a perception of greater validity, while recognizing potential limitations: “[selection] is highly nuanced, ambiguous and it will come with a high degree of cognitive bias” (S3). Inexperienced selectors were “drawn towards making decisions based on what was visceral and obvious” (S7) and had a “mental model of what current performance looked like but had a limited understanding of the value of psycho-social characteristics, which are harder to identify” (S4). Participants reported an increased weighting of psychosocial factors in making judgements, perceiving less observable and measurable factors to be a key differentiator in players transitioning to senior level (Collins & Macnamara, 2017; Rees et al., 2016): “looking back I know now that he was ridiculously driven and focused”. Selector seven reported a shift away from predominantly focusing “on an athlete’s current performance to more of a consideration of their future potential”. Thus, participants put significant weight on data from the ‘coach’s eye’

(Sieghartsleitner et al., 2019; Lath et al., 2021), but this was not only considered an intuitive phenomena (Roberts et al., 2020), with participants also drawing on deliberative reflection and use of mental models: “you build a knowledge over a period of time and your experience comes through successes and failures” (S8). Participants described selection judgements as “a classic combination of art and science and a lot of the art is knowing the individual” (S10).

Individual *organizational awareness* was considered essential when dealing with uncertainty and working effectively in complex and dynamic environments (Costello et al., 2022). Participants discussed an awareness of how organizational factors (meso) could influence their selection decisions: “I try to not let the organization’s current position affect my long-term decision making” (S6), highlighting the challenge associated with maintaining a long-term development focus against the backdrop of a short-term position in the organization. Participants believed that while it was important to consider many contextual factors, a key principle guiding selection decisions was: “what are we looking at for the long term?” (S6), allowing for complex interactions in development and further mitigating the risk associated with time pressured decisions (Henriksen & Stambulova, 2017). Reflecting on the tension between short term and long-term agendas, selector seven acknowledged the importance of organizational awareness: “I try to put both hats on, ‘what do we need now?’ and ‘what are biases from first team staff and from the technical director that I need to manage?’” A long-term development perspective supported a “shift from early on making decisions based on what a player cannot do, and therefore more likely to de-select” (S2), towards an approach that encouraged a focus on “what they can do and what we can do to improve players” (S4). This speaks clearly to individual context as it considers not only what an athlete could do or could become (Morganti, 2023), but also considers how this matches the resources and expertise available to an athlete in their environment to support their development and realize their potential (Araújo & Davids, 2011).

Table 3. Thematic Analysis of Micro Level Factors

Subordinate Theme: Micro Level Factors		
Themes	Sub Themes	Raw Data Exemplar
Education and Experience of Individual Actors	Declarative knowledge	The lack of understanding of coaches to the concept of talent and what transfers to the professional game at the top end (S4)
	Experiential knowledge	You build up a sort of experiential knowledge base of what you instinctively understand to be true of those that will transition. And then trying to articulate that, and make sense of that and process that for yourself, I guess is the ultimate key because some of that will be highly nuanced, it'll be ambiguous, and it will come with a high degree of cognitive bias. (S3)
Working in Complexity	Sources of information	So, I think it's more a case of how can we utilize this information to make sure that whatever we do next has a positive impact on the player. Rather than utilizing it on the basis of you're in or you're out. (S3)
	Changing of information weighting over time	I wasn't as educated as I am now around maturation and getting too excited about players at too young an age I think we're all guilty of. (S10)
	Organizational awareness	Yeah, so I try to not let the organization's current position affect my long-term decision making. I try and put both hats on, right what do we need now and what are biases from first team staff and from technical director that I need to manage, what are we looking at for long term? (S8)

Meso Level Factors That Influence Talent Selection

The second theme centered around the meso level factors that influence talent selection, focusing specifically on the systems and processes of an individual organization. These were organizational influences, group decision processes and shared understanding. See Table 4, p. 84.

Organizational Influences

Organizational culture was described by Henriksen and Stambulova (2017, p. 272) as a key Environmental Success Factor (ESF) consisting of cultural artefacts, espoused values, and basic assumptions. Participants perceived that selection decisions were consciously influenced by cultural considerations within their organization (Hodge et al., 2014). Some participants reflected that: “whether implicitly, or explicitly, the conceptualization of talent is top down” (S4), with athletes needed to demonstrate qualities valued by the upper echelons of an organization. These beliefs were

seen to influence selection throughout the talent system: “there will be a weighting of subjective views on individuals based on what an organization values” (S7). Selector eight reflected that his was “a very working-class club” where visible demonstrations of commitment were central to the culture of the club and recognized as a key positive factor in promoting selection. The “no dickheads” selection policy of the New Zealand All Blacks (Hodge et al., 2014), is an explicit example of how selection has been used to maintain, or change organizational culture (Cruickshank et al., 2013), and although the culture of the senior team was acknowledged as an influencing factor, participants stressed that “you wouldn’t exclude players solely on the basis of that [senior team culture]” (S1).

In addition to the perceived potential of the individual, participants discussed the need to consider if there was a vacancy for an athlete to move into. Thus, *succession planning* was considered a prominent organizational factor influencing selection decisions: “succession

planning is everything around managing elite performance in our environment and being really clear on what our recruitment targets are and what we need in the group" (S11). There was an expectation among participants that "you have to fulfil a role on what the needs of the professional environment are" (S4) and they recognized that "there are context decisions to be made" (S3). Selection decisions are often based on a range of contextual factors including available opportunities within an organization: "you are going to be influenced to recruit based on what that environment needs at that particular time" (S4). Participants recognized situations where opportunities for selection were compromised, for example, where there is a "strong financial position and a larger playing senior squad and academy players have always got to do more to get a playing opportunity...which affects future selection decisions" (S10). In this sense, effective succession planning could be stripped back to "knowing who needs to be ready when" (S11).

Group Decision Process

Interdisciplinary triangulation was highlighted as common practice in talent selection utilized by organizations in this study. This involved integrating information, subjective and objective data, techniques and perspectives from a number of specialised teams within an organization to support decision making. Røsten et al. (2023) found that coaches compared how they evaluated and analysed players by putting information together, much like completing a puzzle. Reflecting the variety of approaches to talent selection between organizations, Selector 10 described a less common process "where a specific person oversees the recruitment of staff and recruitment of players" with the aim of "taking the load and the pressure and the conflict of interest off the remaining staff members". An interdisciplinary decision process however was found to be utilized in many organizations with "all departments having their say within a thorough internal audit process" (S7). These processes were used to deliberately audit predictions made by sport specialists to "try to step back" (S6) and involve

the wider support team to work in an integrated manner to strengthen selection processes (Burns & Collins, 2023):

The decision-making process we go through is a multidisciplinary approach, every member that works with that player is in the initial meeting and everyone gets a voice and an opinion on suitability for scholarships or professional contracts (S10).

Kahneman et al., (2021) introduced the concept of *decision hygiene*, suggesting its purpose is to improve human judgement by reducing the influence of noise. Decision hygiene techniques within an organization were found to be part of a more deliberative and formal approach used to reduce noise in selection. These techniques include the use of consistent, preventative measures to minimise the chance of noise such as thinking statistically, choosing and training better judges, and aggregating judgements with participants sharing examples of these techniques:

We had certain criteria for people that we would bring forward to those selection meetings. How many times have we seen them? We need to have seen and reported on their plan at least five times. There was a threshold, and we would grade them. But we wouldn't even discuss a player that hadn't been seen that many times. (S5)

Selector 10 reflected on a process that involved decomposing talent indicators (Lüdin et al., 2023) where "players were assessed and graded based on previously identified performance characteristics and indicators and limiters of potential" (S10), which was perceived to promote more deliberative thinking and reflection, ultimately enhancing the selection process (Marcoci et al., 2023). Predictions or assessments based on predefined decision rules suggest something akin to an actuarial approach which often leads to superior performance predictions (Den Hartigh et al., 2018). An aggregation of judgements (Kahneman et al., 2021) has been associated with improved decision-making accuracy and by extension a

similar multidisciplinary approach utilizing collective intelligence (Radcliffe et al., 2019) and appropriate decision hygiene techniques could be expected to strengthen the validity of talent selection decisions.

Reflective practice has been established as common practice in coaching (Cushion 2018), including talent selection. Participants in the current study provided various accounts of *retrospective reviews* post selection to evaluate the validity of a decision and potentially strengthen future decision making. Selector five reflected on a review of the decision process: “we examined why we did what we did, with no blame, just to learn from what we did, why we did it” rather than focus on the ultimate outcome: “was it a bad decision if he went on to flourish at another club?” (S7). As was captured by the reflections of participants, binary notions of poor decision making were rejected:

It’s very hard to evaluate successful decision making because once deselected and players move outside your environment there are so many factors no longer in your control it’s almost impossible to justify that with future status. (S4)

Indeed, this suggests that a review procedure with a focus on the decision-making process rather than the outcome might be considered more appropriate when evaluating the efficacy of selection decisions.

Shared Understanding

Collaboration and coherence within a TDE is considered to be a feature of a functional environment (Hauser et al., 2022) and developing a *shared model* related to talent selection was considered by the participants to have a positive effect on their selection decision making (Mathieu et al., 2000). Taylor et al., (2022) proposed that developing shared models at all levels of the talent system may have a positive effect on enhanced practice. Participants recognized the importance of a shared model (Barracough et al., 2023) but reflected on how a lack of shared understanding resulted in incoherent selection practices: “no

we don’t, [have a shared model] it’s not aligned, we tried to do it a few years ago and we got to a certain stage, but certain people still went on their own track” (S2). Participants stressed that a shared model should “tap into the succession planning of the club” (S1) but acknowledged the difficulty in implementing principles related to talent selection and developing a collective understanding across their organization:

I don’t believe that the time and effort had been put into yet to actually lead to a shared mental model top to bottom. It had been produced and was being promoted but hadn’t yet entered the social consciousness of everyone on the pathway. (S4)

Participants described “bespoke mental models” (S3) and reflected that: “in terms of joining up philosophies on scouting, recruitment and retention across the club, we are as joined up as ever, we worked hard over the last five years because it was something we weren’t doing well” (S10). Participants believed that the development of a shared understanding was influenced from the top down as it was “established very clearly from a good pathway lead on how you ‘talent ID’ and how you recruit players” (S4). To mitigate against the risks that might result in a misaligned philosophy within the club, S4 reflected that their organization: “did a lot of work internally to understand talent” and developed a “strong collaborative approach to understand what we were trying to identify and why.”

Table 4. Thematic Analysis of Meso Level Factors

Superordinate Theme: Meso Level Factors		
Themes	Sub Themes	Raw Data Exemplar
Organizational Influences	Organizational culture	Conceptualization of talent in the organization is top down driven so, whether implicitly or explicitly, there will be a weighting of subjective views on individuals on what the organization values. (S8)
	Succession planning	I think succession planning is everything around managing elite performance in our environment, and being really clear on what our recruitment targets are and what exactly we really need within the group, communication with people that are in your program as well, and making sure everyone's really clear on what you're actually trying to do. (S11)
Group Decision Processes	Interdisciplinary triangulation	So, I do rely on my coach's eye and on my belief system quite a bit. But I try to step back from that. And our decision making and the process that we go through, it's a multidisciplinary approach. Every member of every department that works with the player is in the initial meetings, everybody gets a voice around what we feel we should do for giving or not giving scholarships, same with professional contracts, that then gets accelerated and then it starts to become streamlined, and it is key decision makers. (S10)
	Decision hygiene	Anything that we collect from scouts is their opinion. It's also backed up with any match data you collect over time, more than one scout or more than one coach. And then, by the end of the season, or the end of the phase, you've got a package of information to provide a case. (S10)
	Retrospective reviews	It was really interesting to go and sit down with people and go through all our decisions, we called it "black box thinking," why did we do what we did? And, you know, let's learn from what we've done. (S5)
Shared Understanding	Shared model	We've worked quite hard on that over the last five years, because that was certainly something we weren't doing well. And I think a good pathway lead will also establish very clearly from a pathway and Academy point of view, how you're going to recruit players, and how you're going to talent ID. The challenge is then making sure that it taps into the succession planning of the club and that does take a lot of work. (S10)

Macro Factors That Influence Selection

The third superordinate theme concerned macro level factors that influence talent selection, focusing on the wider system in which micro/meso interactions take place; e.g., levels of systemic resourcing, macro system design, and the high-performance milieu. See Table 5, p. 86.

Systemic Resourcing

There was shared awareness among the participants of the *impact of resourcing on*

decision making as it shaped processes and systems related to talent selection at all levels in their respective organizations. Taylor et al., (2022) proposed that selection should be considered from a resource allocation perspective and that decisions about when and how to select should be viewed as a matter of strategic priority. Participants acknowledged that resources were often limited and that there were "huge financial and resource challenges" (S5), due to a "relatively small number of staff who have multiple roles to fulfil so they are

stretched thin” (S1). This not only challenged the capacity of the staff to “put the right amount of time and resources into these [selection] decisions” (S5), but also had a significant impact on many athletes by challenging how long individual organizations could keep athletes in the talent system to make more informed select decisions:

One of the key things from a strategic point of view is where do you put resources and time and energy? You’re saying realistically you’ve got to make some strategic decisions from a TID point of view with limited resources” (S2).

Such examples highlight challenges associated with making strategic talent selection decisions while operating with limited resources, further amplified when there is a lack of clarity and consistency regarding good selection practice in the existing literature (Till & Baker, 2020).

Macro System Design

Another example of the impact of resources on talent selection are decisions related to the *placement of selection points*. Participants highlighted a high degree of variability in the selection method and the timing of selection points in the various talent systems (e.g. soccer selection decisions were made significantly earlier than rugby). Participants struggled to provide an evidence informed rationale for the regulatory mechanisms that imposed selection points. For example, in the case of one sport, it was perceived that decision points early in the system were regulated by a governing body, but lacked the necessary resourcing for an appropriate selection process:

Structurally there are huge challenges, so the whole structure of the system is fundamentally flawed where the initial point of selection happens outside the remit of the academy (S4)

Instead, selection decisions often rested with less experienced staff without the individual capacities, or group processes, for effective decision making. Often regulations cut off points; e.g., “pathway selection was capped at

18 years of age” (S10) or created “unnecessary pressure to make a decision on a player when you should be able to engage with them beyond that” (S10). This may suggest that rather than individual actors being guilty of type two errors of decision making, these errors are a feature, or by-product of macro-level policy decisions. Where macro policies encouraged early selection (i.e., tree felling) instead of hedge-trimming decisions, participants believed that their ability to make well-informed selection decisions over time was compromised (Johnston & Baker, 2020). The potential risks (errors) associated with this type of selection method become magnified in organizations with limited resources that need to make challenging decisions based on the optimum deployment of those resources.

High Performance Milieu

Short termism within an organization, a feature associated with a dysfunctional environment (Hauser et al., 2022), was highlighted as a key element capable of influencing talent selection decision making. Participants believed that short termism driven from the top down conferred pressure and forced inappropriately early selection decisions; for example, “people focus on what they want now at the top end and don’t appreciate the process or the journey people go on to get there” (S3). Selector 2 reflected that senior coaches “didn’t react positively to somebody who doesn’t fit what they need them to be at a moment in time.” This acted to make future selection decisions overly cautious in order to prevent further conflict or reputational consequence.

Elite sport is a high-pressure, result driven business and in many situations the *job security* of senior staff in an organization (cf. Taylor et al., 2022) was cited as a factor that influenced talent selection decision making:

They’re getting judged over the next three games; if you lose those games you’re out of a job. So anything longer than that often, not always, they’re not so interested in supporting your recruitment decisions on players. (S5)

Talent identification and selection are inherently uncertain and unpredictable (Røsten, 2023). Participants reflected on the challenges associated with operating in unpredictable conditions; e.g., “[being about to] work with his fourth director of [club name] in ten years” (S9). Some participants aimed to mitigate these stressors by generating “a player identification and development model that stays in and not

changed every couple of years based on a new direction from a new performance director” (S10). In summary, participants reflected that in such a volatile, dynamic environment, pressures within the organization and a lack of alignment often made it “difficult to adopt a consistent long-term perspective to talent identification and development” (S11).

Table 5. Thematic Analysis of Macro Level Factors

Superordinate Theme: Macro Level Factors		
Themes	Sub Themes	Raw Data Exemplar
Systemic Resourcing	Impact of resourcing on decision making	Huge financial and resource challenges and a relatively small number of staff who have a lot of roles that they need to fulfil so they are stretched and thin in their ability to put the right amount of time and resource into these decisions. (S4)
Macro System Design	Placement of selection points	And I think because our pathway is also capped at 18 there is also this unnecessary pressure to make a decision on a player at 18, when you should be able to engage with them beyond that. (S10)
High Performance Milieu	Short termism	We need to have a youth player development model that stays in, it's not changed every couple of years based on a new direction from a new high-performance director. We've had several changes at the top in recent years and each time a new technical model. (S6)
	Job security	They're getting judged over the next three games, if you lose those games you're out of a job. So, anything longer than that often, not always, they're not so interested in supporting your recruitment decisions on players. (S5)

General Discussion

This study aimed to explore how talent selection decision making has occurred in team sport and to examine the contextual factors that have influenced the process. Micro (individual), meso (organizational) and macro (system) lenses were used to capture the range of factors that impact talent selection across an entire talent system. The research also sought to contribute to an underexplored area of study within talent

selection by exploring the sources of information that talent selectors use when shaping and updating beliefs about an athlete's potential, how they utilize that information to form judgements, and provide insight into the process of decision making for talent selection rather than the outcome itself.

Till and Baker (2020) describe talent selection as an ongoing process of identifying individuals at various stages of development that demonstrate prerequisite levels of

performance. This description acknowledges the complexity of talent selection highlighting that there are multiple decision types at various stages and time points across a talent system, and it was found that initial selection is often the responsibility of staff with limited understanding and experience related to the nuances of talent identification. Also, despite participants stressing its importance, there often seemed to be a lack of shared understanding within participant's organizations to guide complex talent selection decisions. Internal turnover of staff and frequent changes at the top level of an organization, features associated with elite level sport, challenge the integration and consistency of talent selection philosophies and practices. Short term pressure to win at senior level has the potential to influence selection decisions and compromise an athlete's long term development plan by prematurely promoting an athlete or in some cases limiting opportunities for an athlete to progress to senior level.

Recognizing talent selection as an ongoing process supports the view that talent emerges and is dynamic and multidimensional (Baker et al., 2019). This suggests the possibility for use of a hedge-trimming approach, with the continual updating of judgement and beliefs through observation and interaction with athletes over a longer period of time. In practice and in research, this should be contrasted with a tree-felling approach with static selection time points where an athlete is simply in or out. It is in this manner that both practice and research should consider the significant differences between types of decision making. Hedge trimming takes account of the limitations of long term prediction and might enable the ideal of "as many as possible, for as long as possible" (Erikstad et al., 2021), to provide athletes with the opportunity to develop over an extended period of time to accelerate or realize their potential (Till & Baker, 2020). Bjørndal and Ronglan (2021) also propose a similar strategy based on incremental analysis and decision making as preferable when faced with complex problems. There is also a need to recognize that in many cases regulatory mechanisms and

practical considerations mean that tree felling will be prominent across contexts. It is the tree-felling approach that type 2 errors should be of concern; that is, that athletes are deselected prematurely, but with no opportunity for return (Baker et al., 2018).

There are many challenges, including a lack of resources and suitable expertise, associated with compiling, analyzing and interpreting data to support talent selection. Interestingly, participants in the current study perceived subjective data as more valid than objective data, considering psycho-social data, in particular, as critical for informing selection decisions. This became increasingly important the closer athletes were to transitioning into senior squads. Bar-Eli et al. (2023) also argue that a big-data approach could be applied to strengthen the link between subjective and objective approaches, again raising the question of resources as this would also require investment in the education of key stakeholders to interpret and utilize the data. Güllich et al. (2023) suggest that regardless of data or information available to selectors, junior performance has limited predictive value for senior performance, questioning the relevance of deploying limited resources to collection and analysis of data that may not be helpful in making selection decisions in the talent system. Finally, specifically considering the context, talent selection decision making in elite sport lacks the continuous feedback (often a delay of years) to update information and enhance the ability to forecast or make predictions based on an athlete's future success (Johnston & Baker, 2020). In this respect, it is important to note that there is a dearth of existing longitudinal data that can be utilized to understand and support decision making.

The findings of this study have the potential to influence how talent systems are structured to support decision making at every level. While acknowledging the practical necessity of the use of the tree-felling approach, systems should be structured in a manner that allows for hedge trimming as long as possible to expand opportunities for players to emerge as talented athletes (Røsten et al., 2023). Selection

decisions should be relatively low risk for athlete re-entry and allowing for the non-linearity of progression so often a feature of the literature (e.g., Güllich, 2014). Within organizations, we also suggest the need for a recognition of the type of decision that is being taken. If there is more of a tree-felling decision that utilizes less longitudinal information, we align with the recommendations of Klein (2022) in suggesting the need for more classical decision-making approaches that are prominent in the talent literature (e.g., Bar-Eli et al., 2023; Kahneman et al., 2021). Regardless, despite views that developing shared mental models can enforce conformity and group think, if content is appropriate there is the potential for greater collective understanding and coherence of approach to selection. Our findings, when considered alongside literature pointing to the complex interactions between an athlete's environment, tasks and experiences, suggest that retrospectively considering the validity of selection decisions is, at best, unproductive. Instead, focusing on the decision-making process rather than the outcome of the decision itself is likely to be a more productive use of limited resources, time, and energy. Further research into applied talent selection practices will impact our ability to make effective decisions related to how, where, and when we allocate and deploy limited resources at various points on the pathway, to optimize the selection and development process in the future.

Practical Implications/Recommendations

Based on the results of the research we have included a summary of suggestions for consideration to improve talent selection decisions:

- Move away from an approach suggesting an absolute need for objectivity towards one that recognizes the nuanced nature of selection decision making and the influence of systemic and contextual factors.
- Focus energy and limited resources on the quality and integrity of the decision-making process (and the talent system) rather than retrospective evaluation of perceived decision accuracy.
- Talent systems should support as many athletes as possible, for as long as possible to promote hedge-trimming decisions and continuous updating of judgements, allowing for multiple entry and exit points (Bailey & Collins, 2013).
- Develop shared mental models across staffing groups to enhance clarity of desired characteristics, how selection will occur and broader contextual factors to support decision making.
- Work towards an integrated approach between coaches at multiple levels to enhance organizational coherence in talent selection.
- Work towards a triangulation of objective and subjective data from multiple sources, not to improve decision making accuracy but instead to provide a best-fit decision.

Authors' Declarations

The authors declare that there are no personal or financial conflicts of interest regarding the research in this article.

The authors declare that the research reported in this article was conducted in accordance with the Ethical Principles of the *Journal of Expertise*.

The authors declare that they are not able to make the dataset publicly available but are able to provide it upon request.

ORCID iDs

Ian Costello

<https://orcid.org/0000-0002-6731-3752>

Jamie Taylor

<https://orcid.org/0000-0002-9958-0871>

Áine MacNamara

<https://orcid.org/0000-0002-8110-6784>

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