



Applied performance analysts in association football: A scoping review of roles, challenges, and opportunities (2010–2025)

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Abstract

Performance Analysis (PA) has become integral to modern football, yet Applied Performance Analysts (APA) currently find themselves at a crossroads, with technological advancements and adaptive responsibilities shaping their landscape of practice. This scoping review aimed to map the academic literature on APA practice in football, identifying responsibilities, competencies, and contextual challenges shaping the profession. Following PRIMSA-ScR guidelines, searches across SPORTDiscus, APA PsycInfo, and Web of Science identified 829 records published between 2010 and 2025. After screening and full-text review, 36 papers were included and analysed using inductive thematic analysis. Two overarching themes were created, each defined by four subthemes: Ambiguity (Responsibility, Technology, Research Gap, Governance) and Stakeholders (Perceptions, Relationships, Culture and Education). Findings indicate APA roles have evolved from data collection to data translation, suggesting a growing demand for technical and pedagogical skills amid rapid technological innovation. However, fragmented governance, unclear accreditation pathways, and inconsistent stakeholder engagement reinforce role uncertainty and limit progression. Stakeholder perceptions and organisational culture influence APA integration within multidisciplinary teams. This review highlights the need for industry-recognised standards, integrated education models, and practitioner-driven research to bridge the gap between theory and practice. Addressing these issues is critical for sustaining APA relevance and impact in high-performance football.

Keywords

Governance, multidisciplinary team, organisational culture, soccer, technology

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Introduction

Performance analysis (PA) has become integral to modern sport, positioning applied performance analysts (APA) as embedded practitioners within multidisciplinary teams (MDTs).^{1–3} Over the past century, PA has evolved from a basic hand-notational process used to systematically observe, measure, and evaluate performances,⁴ into a recognised discipline, underpinned by advances in data science and video technology that support learning and decision-making.^{1,5} These developments have established PA as essential to support coaches and players in high-performance environments, shaping tactical decisions, player development, and organisational strategies.^{1,6,7} In turn, the APA role has expanded, with practitioners now responsible for curating, translating, influencing, and educating through performance insights.^{2,3} However, the role's rapid evolution has outpaced conceptual clarity, creating uncertainty around responsibilities, boundaries, and

identity, subsequently leaving APAs to navigate an ambiguously multifaceted landscape of practice.^{1,8}

Nowhere is this ambiguity more pronounced than in association football (“football” henceforth), the world’s most commercially powerful and widely played sport, characterised by global visibility, intense competition, and rapid technological advances.^{9–11} While APAs are embedded in almost all elite football structures, ambiguity persists regarding their responsibilities, required competencies, and pathways into practice.^{1,8,12} Existing research has focused on technical outputs and player-focused metrics,

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reflecting PA's reductionist roots and its objective lens for measurable feedback for decision making.¹³ While valuable for informing tactical and physical preparation, this has left the first-hand experiences of APAs relatively underexplored, despite their role being shaped by complex organisational, interpersonal, and politically charged demands.^{8,10}

Practitioner-focused literature reveals instability of this environment, shaped by unbalanced political relationships,¹⁴ stakeholder misconceptions,^{15,16} and limited professional governance.^{3,7,8} These challenges are entrenched in football's traditional hierarchies and resistance to change.^{17,18} Yet ambiguity is not entirely detrimental; it offers APAs flexibility to innovate, adapt, and carve out influence within evolving performance structures, potentially increasing their strategic value.³ Football also provides strong emotional rewards, with APAs often gaining fulfilment from working closely with players, contributing to performance outcomes, and experiencing the buzz of matchday involvement,¹⁹ a passion of which frequently sustains commitment to the role.²⁰ However, unclear expectations, undervalued contributions, and unstable career pathways continue to shape APAs' experiences,^{15,16} factors that collectively reinforce ongoing role ambiguity.

Understanding this tension between opportunity and instability is essential for shaping future practice. A scoping review can enable this understanding by mapping the literature, summarising findings, and identifying the challenges and opportunities that currently face APAs in football. Unlike systematic reviews, scoping reviews prioritise breadth over depth, making it suitable for exploring emerging topics with conceptual ambiguity. Therefore, the present scoping review explores the evident themes of conceptual ambiguity that persist in the fragmented literature surrounding the APA role in football. By mapping these dynamics, the review aims to provide a realistic understanding and explanation of the APA role in football, informing strategies for governance, education, and professional development.^{3,8,21}

Methodology

To explore empirical undertaking of the APA role in football, including its responsibilities, influences, challenges, and constraints shaping practice, this review employed a scoping methodology. The approach was informed by Arksey and O'Malley²² and further refined by Levac et al.,²³ whilst adhering to the PRISMA-ScR guidelines²⁴ to ensure transparency and rigour. Accordingly, the guiding research question to inform the search strategy was "What does existing literature reveal about the role of an APA in football?"

Search strategy and eligibility criteria

The search strategy was developed collaboratively by TAM and JWF to ensure comprehensive coverage of the literature. Searches were conducted across three different databases (SPORTDiscus, APA PsycInfo, and Web of Science), selected

for their breadth in sports science, sports coaching, and sport psychology research. Combined keywords and Boolean operators included: ("Performance Analysis" OR "Analyst" OR "Match Analyst" OR "Applied Performance Analyst") AND ("Association Football" OR "Football" OR "Soccer") AND ("Practitioner" OR "Role" OR "Professional Practice" OR "Relationship" OR "Technology"). This search strategy captures literature pertaining to the applied nature of the APA role, its responsibilities, relational dynamics, and technological tools that shape the performance-support work. The final group of terms ensures that studies relevant to the evolution, context, and lived practice of APAs in football were identified in the search.

Key eligibility criteria were set following the Population, Concept and Context (PCC) framework,²⁵ ensuring the identified papers were focused on (a) APAs or practitioners concerned with the application of PA, (b) their application of PA in the applied environment or factors that may influence it, and (c) specifically football, with no restriction of study design. Further exclusion criteria were set to the database search, ensuring the review only captured (d) peer-reviewed, (e) journal articles or book chapters that were (f) published in the English language.

The search was conducted in January 2026, covering literature published from January 1st, 2010, to December 31st, 2025. This 15-year period was chosen to capture the timeframe in which PA became professionalised, analyst roles expanded within MDTs, and advances in video and data technologies fundamentally reshaped APA practice, alongside governance changes within football, such as the introduction of the Elite Player Performance Plan (EPPP) in 2012, that formalised the use of PA in academy football.^{26,27} Limiting the review to this period ensures relevance to contemporary workflows and role expectations.

Study selection

The full screening process was undertaken by TAM and JWF. Both independent raters utilised online tools during the screening process to improve productivity, using the Deduplicator (TERA, V1.14.0)²⁸ to assist with the removal of duplicates and the Screenatron (TERA, V1.14.0)²⁹ to assist with title screening. During full-text review, additional papers were identified in the reference lists of the included papers and assessed for their inclusion in the study; a process of which is recommended practice in scoping reviews.²² To ensure trustworthiness, any discrepancies were discussed and resolved collaboratively, and where disagreement arose, DV provided final input to reach consensus. This multi-reviewer process strengthens the trustworthiness of study selection and thematic interpretation.

Assessment of methodological quality

As the primary aim of the scoping review was to map and synthesise the breadth of literature rather than formally

evaluate rigour, an exploratory appraisal of methodological quality was conducted to contextualise study quality. The JBI Critical Appraisal Checklist for Qualitative Research,³⁰ as recently undertaken by Paul et al.,³¹ was used as a guiding framework. The checklist highlights such aspects as alignment between research aims and methodology, appropriateness of data collection and analysis, reflexivity, ethical considerations, and clarity of findings. Consistent with scoping review methodology, studies were not excluded based on quality,²³ instead, the appraisal highlighted methodological strengths and limitations across the evidence. This process was descriptive only and did not influence the inclusion or weighting of results. A summary of the appraisal outcomes is presented in the Supplementary Table. The findings from this appraisal informed, but did not determine, the subsequent thematic analysis.

Thematic analysis and consultation

Following study selection and quality appraisal, inductive thematic analysis was performed following Braun and Clarke's³² six-phase framework. All included papers were charted in Microsoft Excel (for Mac, Version 16.103.1, Microsoft Inc), capturing key details such as authorship, methodology, participants, and findings. Initial coding involved extracting meaningful units that related to the APA role, including responsibilities, competencies, and contextual challenges. The generation of codes was informed by the collaboration of the review's expert authors, of which JWF and DV have over 15 years of academic and applied experience in PA and Coaching, and TAM, with 8 years of experience in PA. Codes were collated into candidate themes through iterative discussions between TAM and JWF, with discrepancies resolved through consensus and input from DV. Supporting quotes were stored in Mendeley (Version 2.139.0, Elsevier Ltd) for transparency.

Themes were refined through multiple cycles of review to ensure conceptual clarity and differentiation. The inductive process resulted in two overarching themes, *Ambiguity* and *Stakeholders*, supported by interrelated subthemes. The subtheme of *Education* was initially considered under *Ambiguity*, but was eventually reported under *Stakeholders* because it emerged in the literature as a stakeholder-driven concern rather than a structural ambiguity. This adjustment reflects education as a consequence of role ambiguity rather than as a defining feature.

To enhance trustworthiness and practical relevance, a consultation stage was incorporated.²³ DV provided iterative feedback throughout the process, validating eligibility criteria and thematic alignment. Additionally, informal consultations were held with an expert practitioner in PA to assess whether the themes resonated with real-world practice and to identify gaps in interpretation. Feedback reinforced ambiguity as a defining issue in APA

responsibilities, and highlighted education as an important stakeholder concern, justifying its inclusion under the *Stakeholders* theme.

Results

A PRISMA-ScR flow chart summarising each stage of the screening process is visible in Figure 1. The initial search identified 829 papers. After removing 136 duplicates, 693 records remained for screening. Title and abstract screening excluded 664 papers, resulting in 29 articles progressing to full-text review. During this stage, seven additional papers were identified in the reference lists of the included papers. In total, 36 papers were retained for analysis.

The distribution of the 36 included papers by year can be seen in Figure 2, showing a steady increase in published literature concerning the role of an APA in football. Surveys ($n = 12$)^{3,19,33–42} and interviews ($n = 12$)^{3,7,16,35,37,43–49} were the most utilised methodological tool, with approaches such as autoethnographies ($n = 2$)^{50,51} and comparative analyses ($n = 1$)⁸ used less frequently. Up to and including 2021, six papers conducted reviews of literature.^{1,5,18,52–54} Whereas, from 2021 onwards, only two papers were a review of literature,^{11,55} whilst other studies opted for mixed method approaches ($n = 3$),^{3,35,37} focus groups ($n = 2$),^{3,56} and a case study ($n = 1$),⁴⁴ potentially in response to calls for future research to be more reflective of practice.^{1,39}

Of the papers that directly included participants in their methodology ($n = 25$), 13 recruited a cohort operating a single role (5 = Coaches,^{19,37,47,49,57} 7 = APAs,^{3,7,16,36,42,46,50} 1 = Players⁴¹). While this single role focus allows for precise, role-specific insights, the results can lack generalisability, naturally presenting biased conclusions. The other study's cohorts ($n = 12$)^{33–35,38–40,43–45,48,51,58} covered multiple roles, enabling the research to gather and compare the perspectives of APAs and key stakeholders concerned with the provision of PA in practice. Interestingly, nine of these 12 studies were published from 2020 onwards, highlighting a recent movement in PA research to present a more reflective portrayal of how MDTs co-create knowledge and operate in practice.^{1,3}

Findings

Through inductive thematic analysis, two overarching themes were developed: *Ambiguity* and *Stakeholders* (Figure 3). Each theme was constructed by four interrelated subthemes, with *Ambiguity* supported by *Responsibility*, *Technology*, *Research Gap*, and *Governance*, and with *Stakeholders* supported by *Perceptions*, *Education*, *Relationships*, and *Culture*. While natural overlap exists, each subtheme provides unique discussion points on its specific impact on the APA role, which were prevalent across the included papers, and identified as requiring their own

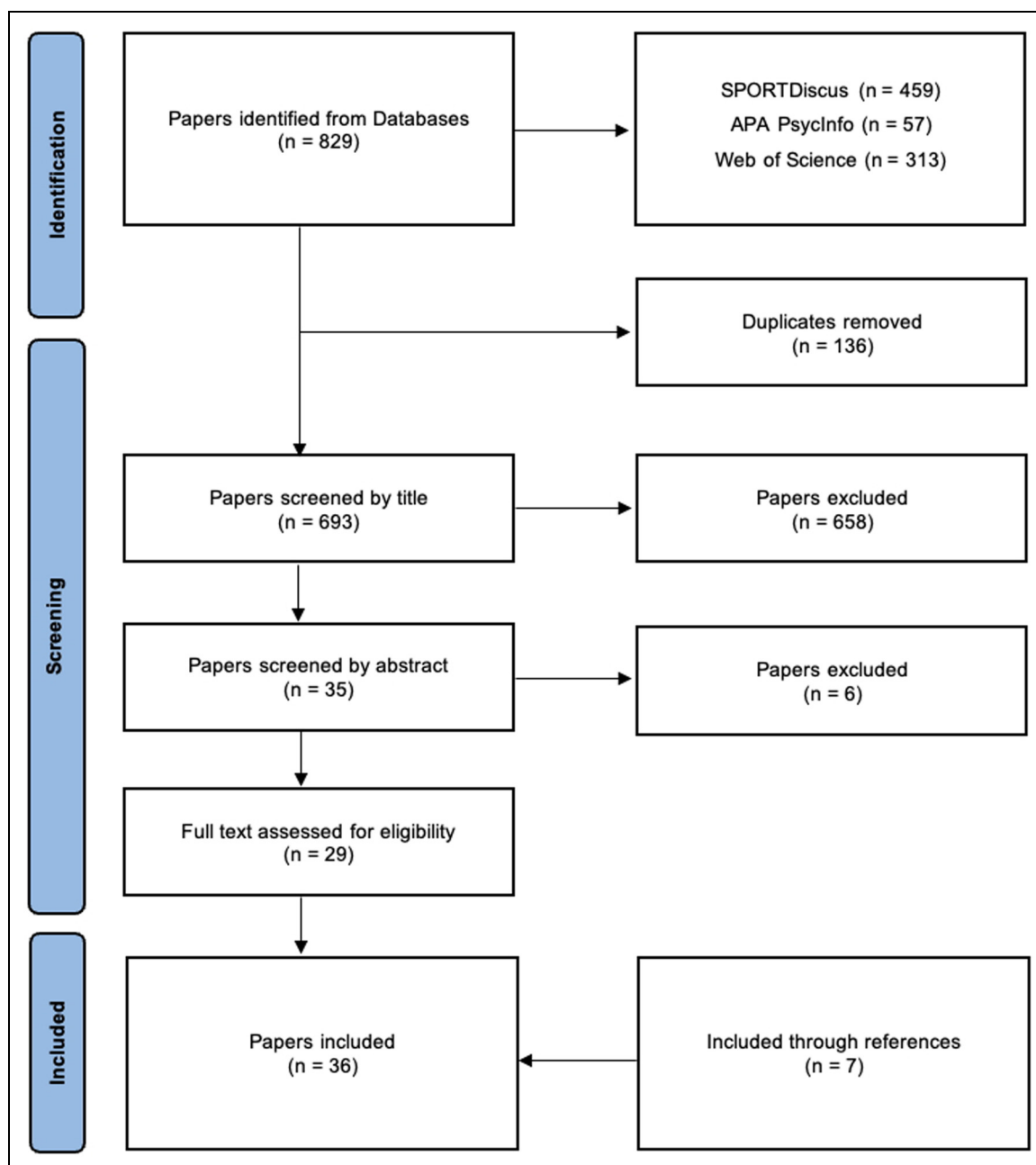


Figure 1. PRISMA flow diagram of the screening process.

subtheme by the authors, as a result. These themes provide insight into the evolving nature of the APA role, drawing upon encouraging opportunities and systemic challenges shaping professional practice in football.

Ambiguity

Responsibility. The responsibilities of an APA were widely discussed and identified across 27 of the 36 total papers. Across the 15 years covered by this review, a significant evolution of the APA role since the turn of the millennium

is captured, driven by increased employment opportunities,⁷ greater industry visibility,⁵⁵ and technological advancements.⁵ Martin et al.³ describe this role evolution as a shift from data collection towards data translation. Consequently, this shift has seen a rise in specific, specialist data scientist/engineer roles at football clubs to address the potential limitations of traditional APAs in interpreting complex, outsourced datasets.³⁴

However, specialists occupying these roles must navigate challenges such as aligning external data with club-specific definitions and ensuring data quality.⁸ This

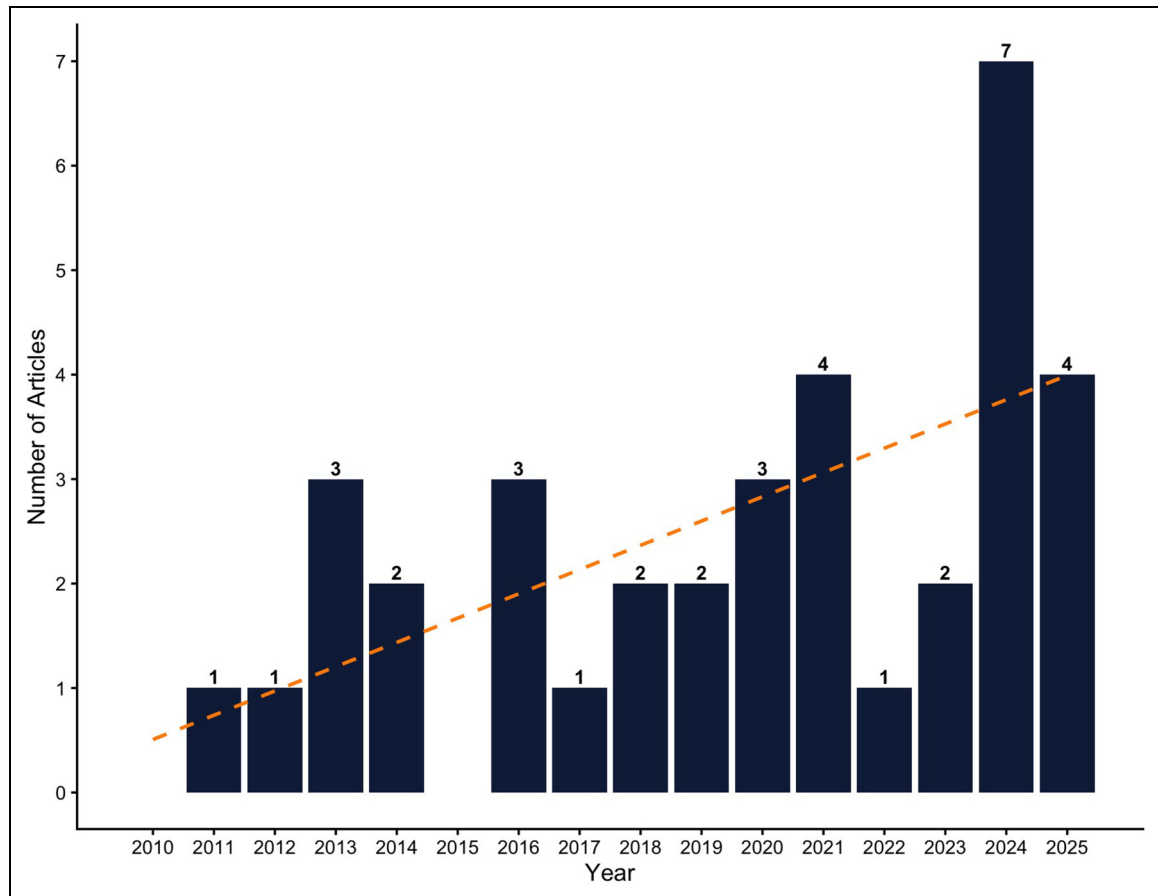


Figure 2. Total papers included in the scoping review by year published.

reinforces the need for APAs with advanced technical and contextual knowledge to bridge the gap between technology, data and practitioners.⁴³ With current workflows expected to be obsolete in the near future,^{2,5} APAs face a dilemma: whether to develop a broad generalist skillset or pursue niche expertise.^{5,8} Through interviews with early-career APAs, McKenna et al.¹⁶ found role clarity to be critical for job satisfaction. Therefore, equipping aspiring and

current APAs with the nuanced understanding required for these responsibilities is essential to sustaining the profession.

The dilemma surrounding the generalist skillset is evident in the emergence of hybrid “coach-analyst” roles, which increasingly require coaching qualifications alongside analytical expertise.^{5,8} Such positions disadvantage specialist, traditional APAs who may lack formal coaching experience and qualifications.⁵⁹ Moreover, through an analysis of job advertisements, Francis et al.⁸ express concern over the reflection of the required skill set for such roles, which blur professional boundaries, raising questions about workload and efficiency. The overlap of responsibilities places APAs in a precarious position when considering career progression.⁵³ While these roles may represent a natural step in the evolution of PA, they also highlight structural tensions. Historically, APAs have relied on coaches for direction during workflows and report building, with coaches often presenting the final messages.^{16,42} The growing emphasis on coaching badges in APA role advertisements reflects this dependency and aligns with the “coach-analyst” trend.⁸

In addition, the movement towards data translation demands proficiency in multiple feedback mechanisms and pedagogical skills, positioning APAs as facilitators of

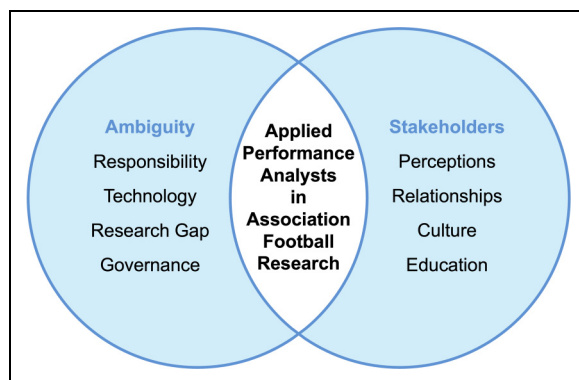


Figure 3. Main themes and sub-themes generated by the scoping review.

learning.³³ Without this breadth and depth, aspiring APAs risk precarity,³³ as illustrated by the Swedish national team practitioner who relinquished PA duties due to burn-out from dual role demands.⁴⁴ This example provides a timely reminder of the tensions inherent in hybrid positions, suggesting that the efficiency of either or both aspects in the role will suffer, limiting the individual's ability to have a meaningful impact.

Technology. The football industry is experiencing an unprecedented evolution of technology.^{5,11} Considering the 15 years of literature captured by the present scoping review, research has progressed from discussing DVDs⁴⁸ and video storage workflows⁵⁴ to explorations of artificial intelligence⁶⁰ and virtual reality.^{38,45} These substantial themes of technological innovation were shared by 22 of the review's total papers. While sophisticated technological advancements offer significant potential, they also bring forth a fear of human redundancy⁵ and ambiguity over responsibilities. Rather than replacing APAs, technology and data must be understood as a tool to support and enhance processes.⁴³

This deeper understanding and synergy with technology was explored by Barker-Ruchti et al.,⁵⁶ who assessed the rapid development of PA technology and the obstacles facing its implementation in practice. Such challenges, and subsequent negative outcomes, often stem from false assumptions that technology is the best or, at times, only route to athlete development and success.⁵⁶ Although elite clubs have access to industry-leading PA technology, cost-effective alternatives enable lower-league teams to adopt soft/hardware, such as wearable technology, despite financial and resource constraints.^{39,42} While tracking data has facilitated the creation of innovative key performance indicators,⁶¹ questions remain about the relevance and interpretability of this information,³⁹ particularly for practitioners unfamiliar with GPS data.⁴³

This journey from initial enthusiasm to eventual dissatisfaction mirrors the Gartner hype cycle, which maps the life-cycle of emerging technology through the lens of its expectation.^{38,62} Monsees^{43p663} illustrates this journey through a practitioner's reflection, where early excitement about GPS technology gave way to frustration when they were inundated with information and "didn't know how to read the data at all". When financial restrictions aren't a problem, the pressure to adopt innovative technology, such as virtual reality, can lead to implementation without adequate assessment of validity and contextual fit.⁴³ Harkness-Armstrong et al.³³ stress the importance of education and engaging with continuous professional development (CPD) to foster critical decision-making regarding technology adoption. Such initiatives can aid practitioners in resisting aggressive marketing and ensure that technological integration aligns with performance objectives.⁵⁶

Research gap. Academic research often operates one step behind professional practice.¹ In one of the earlier published papers included in the review, Mackenzie and Cushion¹⁸ combat historical PA academia, indicating findings derived from the reductionist research of a single, one-off tournament rarely translate to realistic or actionable insights for everyday practitioners. As expressed by latter papers within the review, football is a dynamic and complex phenomenon, where environments can change dramatically within a few years.^{2,5,63} Thus, positivist research that promotes simplistic, "one size fits all" models of PA risks misrepresenting the realities of applied practice; echoing similar challenges observed in coaching^{18,41} and presenting a shared sentiment across 22 of the study's total papers.

Mulvenna et al.⁷ encourage caution when interpreting such models, proposing a continuum of coach-controlled and analyst-controlled tasks to reflect the fluidity of APA responsibilities. This spectrum offers flexibility to accommodate future evolutions to the role. An approach of this essence could be adopted by those concerned with capturing the complexities of the role within an accreditation. For example, the accreditation currently provided by the International Society of Performance Analysis in Sport (ISPAS),^{64,65} which separates academic and applied pathways, may arguably exaggerate the evident "trench between theory and practice."^{61p69} A more integrated and fluid approach, developed collaboratively by academics and practitioners, could help bridge this divide, offering a dynamic interpretation of the role's responsibilities, as well as accompanying CPD opportunities.

Direct calls to address this pertinent issue are echoed across the literature included in this review.^{7,36,56,58,61} With the evolving world of big data and technology extensively covered by football media, there has yet to be a discussion of whether it has genuine relevance to practice.⁶¹ For example, Greenhough et al.'s³⁸ research on virtual reality captures practitioners' opinions without their sufficient understanding of the technology, producing skewed results driven by novelty rather than utility. Continued research of this nature, conducted solely by data scientists or technology experts, may further disconnect findings from applied practice.^{39,61}

Herold et al.^{39p166} express the need for research to "speak practitioners' language", detailing a coach's desire for simplistic, actionable key performance indicators over complex insights derived from tracking data. Integrating practitioners into research design can ensure relevance, improve key performance indicator validity, and model effective MDT collaboration for aspiring APAs. Encouragingly, recent work reflects a shift towards practitioner-driven research.^{33,36,44} Meckbach et al.'s⁴⁴ 21-month-long case study from within the Swedish national team exemplifies this approach; however, it also highlights the time, cost, and access challenges inherent in conducting such research within modern high-performance football environments.

Governance. The evolution of technology, coupled with football's global commercial dominance, has seen a proliferation of APA roles.⁸ This expansion, supported by a substantial body of literature, should therefore support the role's movement towards professionalisation.^{1,66} However, progress is constrained by fragmented governance and conflicting organisational priorities, as expressed directly by nine papers included in the review, of which eight were published after 2020.

A key barrier is the absence of an established, industry-recognised accreditation pathway, as noted in the previous subtheme. Martin et al.³ reported that only a small portion of practitioners within their study's cohort were accredited. A finding shared with Francis et al.,⁸ who identify APAs as typically electing to gain this voluntarily, with accreditation rarely listed as a prerequisite in job advertisements. Without formal accreditation, practice remains unregulated,⁶⁷ and opportunities for structured CPD are limited.¹ As technological evolution continues to outpace educational provisions and practitioner skillsets,⁵ an industry-recognised accreditation could serve as a pillar for applied development, fostering a collaborative environment that embraces change.¹

Beyond accreditations, broader governance frameworks such as the EPPP^{26,27} raise further ambiguity. Dhillon et al.'s¹⁹ study on PA perception in academies provides strong insight into this ambiguity, expressing that while the EPPP guidelines have increased APA appointments and established PA departments within academies, they provide superficial direction by mandating staff numbers without addressing role distribution across development phases. For example, Category One academies require three full-time APAs, Category Two requires one and a half full-time APAs, while academies categorised as Three or Four require no full-time staff.¹⁹ This structure often positions academy APAs, from Category Two and below, as de facto heads of department, despite early-career analysts lacking distinct leadership qualities, covering multiple teams, and operating in environments critical to player development.⁸

If academies aim to develop youth players into the first team,¹⁹ their MDT must consist of educated, accredited, and trusted practitioners. In the absence of clear standards, as detailed throughout the subthemes, the profession risks perpetuating ambiguity and inconsistency. Aligning with Nelson et al.,³⁶ this review urges governing bodies and organisations concerned with the provision of PA to collaborate towards establishing professional standards, accreditation processes, and career development frameworks, with the holistic goal of improving the landscape of the profession for aspiring and current APAs.

Stakeholders

Perceptions. Stakeholder perceptions play a pivotal role in shaping the effectiveness of PA within an MDT, with

insights from 27 of the 36 included papers directly informing this subtheme. The most prominent, of which, from Martin et al.¹ conceptualised this through the lighthouse analogy, where the lightbulb denotes insights and learning opportunities that illuminate decision-making for MDT members. However, these insights are filtered through the perceptions of influential stakeholders, particularly head coaches or managers, whose attitudes can have a knock-on effect across the environment.

For example, if a coach associates video analysis sessions with punishment during their playing career, this negative relationship may influence their engagement with PA processes and, by extension, shape the attitudes of other coaches and players.⁴⁹ Such perceptions can restrict opportunities for APAs to contribute meaningfully to the coaching process and benefit the MDT.¹⁶ Negative views may be apparent based on misconceptions that data alone explains everything in football, overlooking the need for synergy between quantitative and qualitative information and the continued relevance of experiential judgement.^{16,53,56} Conversely, positive prior experiences can, of course, have the inverse effect, with coaches adapting delivery styles to avoid replicating negative practices and emphasising dialogical supportive feedback.^{16,19,35}

Beyond interpersonal dynamics, the review highlights inconsistencies in how certain advanced metrics generated by APAs are interpreted by MDT members.^{34,39,52,61} Lolli et al.³⁴ conducted a survey of delegates from FIFA World Cup 2022 nations, in which metrics such as team threat and xG were perceived as least useful to support the coaching process, possibly due to their complexity and lack of intuitive meaning. In contrast, line breaks and final third entries, aligning with language used by practitioners, were perceived as the most useful.³⁴ These findings highlight the importance of clarity and contextual relevance in shaping perceptions.

Similar challenges apply to the APA role itself. As discussed in the *Responsibility* sub-theme, ambiguity in role definition may lead to divergent views of its value within the coaching process. Like complex metrics, the APA role may be undervalued by some practitioners due to its perceived complexity, while others may overestimate its contribution due to being swayed by culture and the proliferation of discourse surrounding the role rather than practical understanding. Establishing a clear, valid role definition, akin to the simplicity of intuitive metrics, could positively influence stakeholder perception and strengthen PA's integration within MDTs.^{1,34}

Relationships. For decades, the secretive nature of football has shielded the inner workings of club environments.⁴⁶ Recent practical case studies are beginning to break down this barrier, revealing crucial insights into the micropolitical dynamics and employment conditions within the sport.^{17,36,46,68–70} For aspiring APAs, building trust-based

relationships with stakeholders is imperative for fostering the co-creation of knowledge.^{1,37,46} Mayer et al.'s⁷¹ framework, emphasising ability, benevolence, and integrity, aligns closely with the strategies APAs employ to establish credibility and professional identity.³⁶ As detailed by 27 of the review's total papers, it is paramount for APAs to gain the trust of their stakeholders to have a positive impact on the environment within which they operate and benefit the wider MDT.^{8,19,36}

Trust is particularly critical during placements, where aspiring APAs often seek full-time opportunities. A breakdown in trust during this period can undermine credibility and jeopardise career progression.³⁶ This challenge is compounded by football's heightened culture,³⁵ where short-term decision-making and frequent staff changes disrupt relationship-building efforts.^{7,46} The dismissal of a coach or an APA impacts the ability for this relationship to be built, making it paramount that APAs receive education on relationship management within development pathways to prepare aspiring practitioners for these realities.³⁶

Relational dynamics also vary across different stakeholders within an MDT. In an assessment of PA perceptions across an academy setting,¹⁹ APA interactions are often undervalued by foundation-phase coaches, reflecting limited PA integration at younger age groups. Nevertheless, these relationships remain important given the APA's potential influence on individual development plans. Conversely, Professional Development Phase coaches typically demonstrate greater engagement with PA workflows, though APAs must still prove their value to secure trust and collaboration,^{16,19,36} often doing so while navigating their de facto head of department responsibilities.

As support staff structures expand and specialise, maintaining effective communication and relationships becomes increasingly vital for team efficiency and the co-creation of knowledge.^{1,56} Meckbach et al.⁴⁴ illustrate this principle, where the head coach actively promoted a culture of community and integrated problem-solving. Within such environments, APAs often act as a knowledge broker, facilitating dialogue between stakeholders and bridging disciplinary boundaries.¹ More specifically, APAs play an important role in mediating communication between coaches and players,^{41,49} reinforcing the importance of relationship-building as a core, crucial competency for aspiring APA practitioners.³⁶

Culture. Football's cultural landscape is volatile and complex, often leaving support staff experiencing precarity.⁴⁴ Across the review, the head coach consistently emerges as the dominant gatekeeper within this environment, exerting significant influence over workflows and decision-making.^{1,16,36,46,47} The strength of this gatekeeper culture can directly influence success,⁴⁴ reinforcing the need for APAs to develop contextual awareness of social-political dynamics and adapt their practices to align with coaching

practice.³⁶ Overall, this theme of culture that presents challenges for APAs in practice is informed by 21 of the 36 included papers.

This challenge is exacerbated by the reactive decision-making that encapsulates high-performance football.^{5,7,35} Under intense results-driven pressure, clubs frequently adopt new technologies or employ staff members without sufficiently understanding how to best utilise them.^{7,38} As detailed in the *Technology* subtheme, such decisions often result in clubs attaining high-end technology that no one can decipher or, conversely, employing elite-level practitioners with insufficient hardware or software to fulfil their role.^{34,35,43} By firmly embedding PA within stakeholder educational pathways, decisions to adopt new technologies or employ specialist practitioners will be better informed and beneficial to the team.

Cultural constraints also present themselves in gendered and financial disparities. While investigating PA provision in women's football, Harkness-Armstrong et al.³³ report significant challenges linked to precarious investments, which directly impact data collection, feedback mechanisms, and application of insights. These issues are compounded across tiers, reflecting the insurmountable gulf in funding from the elite level downwards in both men's and women's football.^{33,56} Financial strain, coupled with performance pressures, forces practitioners to adapt their processes in a way that may negatively affect the impact of their work.⁴⁷ In contrast, technological innovation has also introduced more cost-effective tools, accelerating PA adoption in lesser-resourced leagues in a short space of time.^{37,56} Despite this, such processes are often undermined by insufficient staffing and expertise, reaffirming the constraint that football's culture has on effective PA implementation.^{33–35,43}

Whilst financial restrictions are an overwhelming barrier, it is clear that there needs to be a shift in the education of internal and external stakeholders towards the value of employing APAs³⁷ and embedding cultural awareness within APA education. As proposed by Martin et al.,³ conceptual models of PA processes should explicitly incorporate cultural constraints to prepare practitioners for the realities of high-performance environments.

Education. In football environments, as discussed previously, the head coach often acts as the primary gatekeeper, exerting significant influence over resource allocation and workflow priorities.⁴⁵ If a coach holds negative perceptions of PA, this can have a damaging impact on its provision within the team. Conversely, the present review revealed strong positivity toward video analysis among stakeholders, with its use widely recognised for reinforcing coaching points and supporting player development.^{16,41,48} Video analysis can also be used as a political tool, enabling coaches to strengthen relationships with players and to impart their philosophy.⁴⁷

Despite these benefits, misunderstandings regarding PA's value persist, creating an ever-growing divide between coaches who actively engage with analysis and those who do not.⁴⁸ To address this, stakeholders require a comprehensive understanding of the APA's contribution to multidisciplinary teams.⁸ This need aligns with calls in research within this review for integrated, holistic approaches to sport science, where collaboration across disciplines is essential for future development.^{1,44,58} These calls are echoed by and shared across 19 of the included papers, who were identified to discuss the importance of PA and the education of stakeholders. Embedding PA within stakeholder education and qualification frameworks represents a critical step towards recognising and legitimising the practice of APAs.⁸

Current gaps in coach education intensify these challenges. While advanced coaching courses (e.g., UEFA Pro, A Licence) often include PA-adjacent modules, lower-tier qualifications, from UEFA B and below, provide little to no training regarding how to utilise PA in their workflow.³³ This disparity creates inconsistencies in professional practice, particularly in conjunction with EPPP guidelines that mandate minimal APA provision, such as one and a half full-time APAs at Category Two academies.¹⁹ These conditions enable scenarios where coaches assume part-time PA responsibilities to simply "tick a box", undermining the quality and impact of analysis.¹⁹ As a result, it's abundantly clear that current coach education programmes and the provision of the APA role in the EPPP guidelines are having adverse effects on a coach's acceptance and engagement with PA.^{19,37} As more coaches become responsible for PA delivery,^{8,19,33} PA must be integrated within the coach education pathway. Doing so will equip coaches with the knowledge to utilise analysis effectively and foster environments where APAs can contribute meaningfully to performance outcomes.⁸

Discussion

This scoping review synthesised 15 years of academic literature to map the evolving landscape of practice surrounding the APA role in football, addressing a critical gap in understanding the challenges and opportunities for shaping practice. Inductive thematic analysis of the included papers resulted in two overarching themes of *Ambiguity* and *Stakeholders*. Together, they illustrate that the challenges facing APAs are not merely technical but deeply embedded in organisational structures and interpersonal contexts, reinforcing the need for integrated education, governance, and collaborative research. The following sections will provide an overview of the findings for both overarching themes, followed by consideration of the strengths, limitations, and future direction of the present review. With the APA role currently at a crossroads, caught between technological innovation, evolving stakeholder expectations, and

fragmented governance, this review provides timely insights for governance, education, and professional development.^{3,5,8}

Ambiguity

The first overarching theme, *Ambiguity*, was constructed through four subthemes: *Responsibility*, *Technology*, *Research Gap* and *Governance*. These subthemes collectively highlight the murky landscape of practice in which APAs operate, where ambiguity is entrenched. Technological advancements have significantly transformed APA responsibilities, from data collection to data translation,³ demanding new competencies in analytics and pedagogical communication.^{1,5} These findings are also captured in a recent publication by Nicholls et al.,⁷² who draw attention to misalignment between how the APA role is conceptualised (technically) and how it is enacted (relationally). As a result, educational pathways and accreditation frameworks have been overwhelmingly outpaced by rapid technological evolution and adaptive responsibilities, leaving practitioners without clear standards or structured career progression.^{5,8,16}

This lack of clarity is compounded by the rise of hybrid roles such as "coach-analyst", which places individuals at serious risk burnout through overlapping responsibilities.^{33,44} Although framed a natural evolution of PA,^{16,19,44} emergence of these hybrid roles place significant strain on an individual, directly compromising both analytical rigour and stakeholder engagement.⁷² While advancements have been made to capture the wider applied nature of PA in academia,¹ governance frameworks, such as the EPPP, future contribute to ambiguity by mandating staff numbers without specifying role distribution or competency requirements.¹⁹ Addressing these issues requires industry-recognised standards and accreditation processes, collaboratively developed by PA organisations, academics, and practitioners.

Collaboration toward this is essential to achieve the desired impact, as multiple organisations offering contrasting certifications fuels the ambiguity that already exists around the APA role. Consideration for the fluid, non-linear nature of the role is also required, as oversimplification through a rigid framework recounts PA's historical positivist viewpoint.¹⁸ Therefore, future governance frameworks must remain flexible, accommodating the contextual and interpersonal realities that underpin effective PA. An industry recognised accreditation would not only provide conceptual clarity, but the necessary CPD opportunities to prepare and upskill APAs for a technologically advanced and relationally complex profession.^{7,61} Crucially, these CPD opportunities would support the aforementioned "de facto head of department" APAs, who find themselves with increased responsibility as a result of the current lack

of governance and provision for the role across different tiers and category academies in English football.

Stakeholders

The second overarching theme, *Stakeholders*, was constructed through four subthemes: *Perceptions*, *Relationships*, *Culture* and *Education*. These subthemes describe the constraints and challenges that arise for APAs due to stakeholder attitudes, awareness, and approaches towards PA in practice. Stakeholders can have an overwhelmingly positive impact on an APA and the function of an MDT.^{1,19,36} However, in the face of a hegemonised culture and entrenched ideologies,^{44,46} APAs are forced to navigate foreboding environments which obstruct their contribution, where a strong relationship with particular stakeholders could significantly impact the uptake in their work.

These findings again align with Nicholls et al.'s⁷² recent work, framing relationship building not simply as a required skill for an APA, but as a foundational “root” of which underpins all aspects of practice, where a relational breakdown may completely undermine the impact of PA in an environment. In football, practical case studies captured in the review peel back the curtain of the secretive nature in which clubs operate,^{17,44,68} revealing the importance of trust in the coach-analyst relationship, while also highlighting the dramatic impact the volatile culture can have on a MDT's structure.^{36,46,70} Given a complete cultural shift can't be achieved overnight, a deeper understanding of the intricacies that make up the environment is necessary to negate its shortcomings. Uncovering this reality for APAs through more exploratory research is an essential means to inform educational pathways and CPD opportunities, providing aspiring APAs with a realistic perspective of the role and equipping them with the relational, interpersonal, and leadership skills necessary for them to succeed.

This development in education is not only for aspiring and current APAs, but also coaches, who are increasingly becoming more responsible for PA delivery.³³ Therefore, the integration of PA throughout all levels of coaching qualifications is essential to educate coaches on how to utilise PA, and effectively prepare coaches, and APAs, for the nuances of the emerging “coach-analyst” role. As co-creating knowledge with stakeholders is essential to PA's impact,¹ it is paramount that a collective knowledge and understanding of its benefit is instilled within members of an MDT through effective education and collaborative environments.

Strengths, limitations and future directions

While quality appraisal is not a requirement for scoping reviews,²³ the JBI Critical Appraisal Checklist for Qualitative Research³⁰ was used to provide additional context on included papers. The broad nature of this approach

fulfils the intended purpose of the review, allowing for the identification of significant gaps in research. Nevertheless, the resulting review of literature is not fully exhaustive, with papers excluded due to not being retrievable by the Boolean operators, and restricting inclusion to English-language publications limits global representation.⁷³ Although insights were drawn from international studies,^{37,44} the restriction fails to capture knowledge from similar papers published in other languages, which is critical given the variation in PA education and professional infrastructure across countries.

Future research should address these gaps through scoping reviews encompassing non-English literature and targeted investigations into specific aspects of APA practice. Future studies mapping PA provision in the UK and longitudinal case studies exploring MDT dynamics, similar to those conducted internationally,⁴⁴ would provide valuable insights. Moreover, after assessing the challenges that face the role, investigation into the impact these challenges have on an APA's overall job satisfaction would provide a deeper insight into the practical implications of the role's current governance, and a focus on the changes necessary for future sustainability. Practitioner-driven research and mixed method approaches will be essential for bridging the research-practice gap and informing education, accreditation, and governance frameworks.

Conclusion

This scoping review highlights both progress and persistent challenges in the professionalisation of the APA role in football. While technological innovation and growing recognition of MDT approaches have advanced practice, ambiguity in responsibilities, inconsistent stakeholder engagement, and fragmented governance continue to hinder integration and limit the role's potential impact. Future strategies must prioritise integrated education models and industry-recognised accreditation, not only for aspiring APAs but also for those employed in professional environments. Governance frameworks should reflect the realities of practice and provide clear pathways for career progression. Embedding cultural awareness and relationship-building within APA training and CPD, alongside critical evaluation of emerging technologies, will be essential for maintaining relevance and resilience throughout an APA's career. The future of PA depends on bridging the gap between research and practice through collaborative education and practitioner-driven research, fostering environments where APAs, whether new or experienced, can deliver evidence-informed, contextually grounded contributions to high-performance football.

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Supplemental material

Supplemental material for this article is available online.

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