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An investigation of high-performance team sport coaches' planning practices

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ABSTRACT

The aim of this study was to provide a rich description of team sport coaches' planning practices and to evaluate these practices in light of the Game-Based Approach literature and Complex Learning Theory. Twelve Gaelic football coaches operating in a high-performance setting were recruited to participate in semi-structured interviews. Coaches prepared two coaching session plans used as prompts within the interview. An iterative thematic analysis developed three major themes: (1) practice activity design, (2) sequencing of practice session content, and (3) contextual factors influencing planning. Despite strong indications of coach engagement with pedagogy in aspects of their session planning, the findings also revealed missed opportunities, with coaches failing to provide explicit learning intentions for session plans, inattention to session sequencing, and limited small-sided game designs. Given these missed opportunities, this paper illustrates how coaches can engage with research and theory to elevate the quality of their planning of coaching sessions.

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Introduction

Planning in team sports exists on two levels (Farrow & Robertson, 2017; Lyle, 2010; Otte, Millar, & Klatt, 2019). At a broader level, there is the long-term planning which considers the periodisation of the team's season; the coach examines the team's overall season calendar to identify blocks for emphasising various physical, psychological, tactical, and technical goals (Abraham et al., 2014). At a micro level, planning in team sports is primarily focused on individual session planning (Lyle, 2010). Guided by the long-term plan, individual session plans for team sports are specific and detailed to account for the minute-by-minute running of the coaching session (Denison, 2010) whereby practice activities are identified and designed in the appropriate sequence to enhance player learning (Light, 2013). This article is concerned with the latter form of micro-level planning in team-based sports (i.e., the

individual session plans), and the pedagogical implications of these planning practices with a particular focus on the Game-Based Approach (GBA) literature.

GBAs have emerged as prominent pedagogical approaches to the coaching of team-based sports. GBAs contextualise learning within game-related practice activities and emphasise questioning to stimulate reflection and interaction (Light & Mooney, 2014). Many cultural iterations of game-based instructional models (e.g., Game Sense, Teaching Games for Understanding) have been developed. Notwithstanding the many forms of GBAs, Light (2013) suggests that all GBAs share four abiding features: (i) the design and manipulation of games, (ii) the use of questioning, (iii) the provision of opportunities for dialogue, and (iv) building a supportive sociomoral environment. Detailed planning is not an exclusive strategy licenced to any specific coaching approach (Lyle, 2010). However, due to the complexity inherent in the modification and sequencing of game forms, and the need to incorporate extensive questioning and dialogue, thorough planning is critical for the successful application of a GBA (Kinnerk, Harvey, MacDonncha, & Lyons, 2018; Pill, 2015).

The creation of explicit learning outcomes based upon specific tactical problems or more general principles of play is an important pedagogical factor when planning a GBA session (Mitchell, Oslin, & Griffin, 2006). Explicitly outlining target tactical concepts (tactical problems, tactical themes, principles of play) can ensure players are clear on the purpose of the session and direct the coach's attention in designing suitable practice activities (Pill, 2013). GBAs advocate that games should form the primary activity within sessions; these games are typically modified in line with the pedagogical principles of representation and exaggeration, supplemented with non-game activity as appropriate, and presented in a sequence that allows for optimal scaffolding of tactical problems to enable player learning (Llobet-Martí, López-Ros, & Vila, 2017; Vinson, Brady, Moreland, & Judge, 2016). Such activities involve the player making tactical decisions in open game-related environments as opposed to closed practice activities that typically involve players practicing skills in prescribed movements (Ford, Yates, & Williams, 2010). Therefore, it is critical for coaches when planning, to use their knowledge of the sport and to take time identifying the key information sources (e.g., principles of play, tactical problems) that guide a player's decisions and resultant (technical) actions within match play (Tan, Chow, & Davids, 2012), and assimilate these within their practice activity design (Pill, Price, & Magias, 2017). Although explicit learning outcomes are clearly advocated within the GBA literature, there is a need to explore the extent to which coaches design sessions around tactical problems or principles of play.

The order in which practice activities are sequenced is a particularly important consideration when planning an individual coaching session, and GBA sessions specifically (Metzler, 2011). Jones and Thomas (2015) suggest that purposeful sequencing may be advantageous in scaffolding player learning of both technical and tactical concepts. The GBA literature promotes a non-linear arrangement of practice activities, with some form of the game as the starting point (Kirk & MacPhail, 2002; Pill, 2016). For example, a non-linear arrangement of practice activities may use a modified game form initially that exposes players to a tactical problem, which is then simplified and progressed through other game forms. Critically, isolated skills practice may feature within the session to assist players' progression within the games, but not as a starting point (Mitchell et al., 2006). In contrast, traditional skills-first coaching methods suggest breaking down tasks into component parts, building up step-by-step, and extensively using repetition of isolated elements (Bunker & Thorpe, 1982; Turner, 2005). Consequently, such methods typically employ technical skills practice first, before applying these technical skills in games or game-related tasks (Metzler, 2011). This compartmentalised approach can create a separation between technique and tactical skill, leading to a disconnect between practice and game play where players struggle to respond in game situations (Light, 2013; Pill, 2014). Despite clear guidelines from the GBA literature, there is a paucity of research investigating coaches' sequencing of practice activities (Kinnerk, Harvey, Kearney, MacDonncha, & Lyons, 2019; O'Connor, Larkin, & Williams, 2018), and even less research on coaches' planning processes in relation to this.

The planning of sessions in contemporary sports coaching now involves a multitude of people feeding numerous sources of information to the coach in advance of planning the session (Stoszowski & Collins, 2016). Performance analysts, strength and conditioning coaches, and assistant coaches are common figures in coaching staff, who in many cases have access to the latest in sports science and coaching technology (Beasley, 2015; Stone & Gray, 2010). However, little research has documented the impact of such contemporary technology (e.g., Global Positioning Systems) and management developments on coaches' pedagogical approach to micro-level planning. As coaching-associated science, technology and organisations continue to grow (Buttfield & Polglaze, 2016), there is a need to investigate their impact on the coach's practice and planning processes.

Sophistication in session planning is a differentiating factor between expert and novice coaches. Research has shown that expert coaches demonstrate a more sophisticated approach to planning that focuses more on the characteristics of the participating players as well as demonstrating greater clarity on the objectives of the session plan (Jones, Housner, & Kornspan, 1995) and greater adaptability in delivery (i.e., the ability to deal with challenges *within*

sessions; Collins & Collins, 2016). In contrast, novice coaches' can struggle to plan appropriate content actualising their desired objectives (Cañadas, Gómez, García-Rubio, & Ibáñez, 2018; Cañadas, Ibáñez, & Leite, 2015). While research has begun to describe the characteristics of quality planning, further investigations are required to understand the processes and factors that facilitate and inhibit coaches in acquiring high levels of planning expertise. An important avenue in understanding these planning processes is evaluating coaches' pedagogical knowledge (Pill, 2015).

A coach's pedagogical knowledge refers to the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organised, represented and adapted, to meet the diverse interests and abilities of the player (Shulman, 1987). Theories of learning (e.g., Constructivism, Ecological Dynamics) are an important source of that pedagogical knowledge and may provide a useful framework to guide and evaluate coaches' planning processes (Harvey & Light, 2015; Stodter & Cushion, 2017). Light (2008) introduced Complex Learning Theory (CLT) to the sports coaching literature as a suitable learning theory to describe the continuous, dynamic and complex forms of constructivism present in GBAs. CLT proposes that learning is a complex process of adaptation that is social and interpretative in nature (Harvey & Light, 2015). For team sport coaches wishing to incorporate GBA strategies within their practice, CLT may assist coaches in the planning of their individual sessions by emphasising that the learner must be an active participant within the learning process; they engage with a meaningful task to organise and construct personal meaning. The coach can facilitate this process by designing practice activities that provide players with opportunities to develop their decision-making that is not solely dependent on direct instruction and explicit augmented feedback from the coach (Harvey & Light, 2015). For this reason, within CLT, games have been advocated as the predominant (but not exclusive) activity for team sports coaches to use in their plans (Light, 2008). Another key element proposed in CLT is that learning is a process that involves interpretation. This element emphasises the role of the individual and how their interpretation of their experiences shapes their learning. The coach may consider this primacy of interpretation in their planning by presenting a sequence of tasks and discussions to ensure that players' learning is scaffolded in a manner that enables the players' to draw upon their experiences from earlier in the session/previous sessions to derive solutions to new scenarios. Together, GBAs and CLT offer a robust lens through which to investigate the strategies coaches employ within their planning process.

Despite the critical role effective planning contributes to the success of a training session, little empirical research has investigated the micro processes involved in individual planning design (Kinnerk et al., 2018).

Furthermore, much of the research that exists on planning has focused on season planning and training periodisation (Abraham et al., 2014). Outside of physical training, Lyle (2010) declares that “there is an absolute dearth of literature examining the planning process in coaching in any rigorous or conceptual way” (p. 86). More recently, North (2017) reinforced this viewpoint, noting a “deafening silence about coaches’ planning practice in academic writing” (p. xiii). Furthermore, some scholars have contested that planning remains oversimplified and under problematised (Cronin & Armour, 2015; Denison, 2010).

The potential of GBAs to offer a critical lens in which to judge and inform coaches’ planning in competitive team sport settings has received little empirical attention to date. Given this paucity of research, insight into the micro details of coaches’ session planning is required. Consequently, the primary aim of this study was to provide a rich description of team sport coaches’ planning practices and to critically evaluate these practices in light of the GBA literature underpinned by CLT.

Method

Research strategy and philosophy

The present study took a qualitative approach that aimed to understand and summarise the pedagogical decisions made by team sport coaches during the planning of individual coaching sessions. By applying a qualitative approach to this study, the research team were able to investigate and probe coaches on the myriad of factors influencing their planning decisions and gain a deeper understanding and interpretation of coaches’ feelings, thoughts, and beliefs about their planning practices.

The design and analysis of this study were consistent with the researcher’s pragmatic philosophical view. A pragmatic research approach “elucidates practical-level truths by developing understanding in how ‘real world’ processes function in applied contexts” (Cruickshank, Collins, & Minten, 2014, p. 109). Specifically, we sought to develop insights from our analysis of high-performance coaches’ planning of sessions that would be practically meaningful for coaches and/or coach developers. Semi-structured interviews were identified as an appropriate means to generate these insights. Furthermore, the specific inclusion criteria for participants, the design of the interview questions, and the incorporation of session plans within the interviews were derived from this overarching goal of providing practically meaningful insights.

Participants

Following institutional ethical approval, twelve Gaelic football coaches volunteered to participate in this study. Demographic information is provided in [Table 1](#). A purposeful sampling technique (Silverman, 2016) was used to select coaches for the interview. Specifically, coaches were selected to participate in the study because: 1) they answered yes to partake in a follow-up interview when participating in an earlier survey and 2) they were currently coaching at senior inter-county level (the highest level in Gaelic football). The coaches were defined as high-performance coaches as they were coaching highly skilled athletes at the highest level in their chosen sport that focused primarily on performance, as opposed to fun or athlete development (Erickson, Côté, & Fraser-Thomas, 2007). Each of the four divisions in Gaelic football are represented within the sample. Regardless of a coach's team division, researchers have identified little variation in training expertise, time commitments, and team preparation across league standings (Kelly, Banks, McGuinness, & Watson, 2018; Mangan & Collins, 2016).

This subset of high-performance coaches was considered appropriate for this study as the participants were “experienced” and “knowledgeable” in their field (Creswell & Clark, 2017), and thus likely to converse at a deeper level on a range of planning issues. All coaches had completed various GAA coach education qualifications and reported employing their own version of a GBA within their coaching. In addition, these coaches are powerful influencers on the coaching population within Gaelic football. The participants are regular lead speakers at coaching conferences and coach education workshops. Within each county, the senior inter-county coach often provides the coaching philosophy which is then implemented down through the developmental and academy squads. Therefore, the influential position and perception of the

Table 1. Demographic details of coaches.

Coach (pseudonym)	Team Div.	Total Yrs of Exp.	Yrs Exp. IC Level
Andrew	D2	36	12
Frank	D2	22	12
John	D1	25	12
Martin	D1	12	9
Senan	D1	18	9
David	D4	8	7
Liam	D3	28	26
James	D1	16	9
Tom	D3	23	9
Brian	D4	20	7
Declan	D1	17	8
Hugh	D4	18	10

TEAM DIV. = the division of the coach's team (teams within senior inter-county Gaelic football play within four divisions); TOTAL YRS OF EXP = Years of coaching experience the coach has accrued; YRS EXP. IC LEVEL = Total number of years coaching at inter-county level.

senior inter-county coach as standard-bearers within the GAA coaching community placed them as a suitable sample to explore the prevalence of planning strategies informed by pedagogy within inter-county Gaelic football.

Procedure

An interview guide was prepared by the research team, informed by an earlier survey study along with the GBA and coaching pedagogy literature. Pilot interviews were then conducted by the lead author with three coaches with inter-county experience for the purposes of ensuring question appropriateness and clarity, and to train the lead author. These interviews were supervised by an independent and experienced qualitative researcher who took notes throughout and provided feedback. Rephrasing of a number of questions and an alteration in the interviewing technique, specifically in the form of “probing” on a set area were noted.

The interview guide was divided into four sections, a procedure consistent with Rubin and Rubin’s (2012) approach of utilising structured stages within interview proceedings. The first section comprised questions relating to the coach’s background, influences, and philosophy. The second section was concerned with the preliminary steps prior to writing the session plan: who coaches would consult with; information they required in advance; how this information may impact decisions. The third section referred to populating the session plan: the overall objectives; practice activity types and why they were chosen; critical factors impacting the design of the practice activities; factors influencing the session sequencing. To facilitate section three, coaches prepared two typical coaching session plans (pre-season and peak-season) that would be used in the interview as prompts for aiding recall and framing subsequent probing (Kearney, Carson, & Collins, 2018) on the session content and underpinning rationale (e.g., “what is the focus here?”; “why was that approach used?”). This section investigated the *why* behind coaches’ choices with specific examples of *how* coaches did what they did, to corroborate their claims as well as providing tangible examples of their coaching practice. Section four included a series of coach education queries (e.g., preferred coach learning methods; the impact of coaching research on planning practice).

The participants consented to digital audio recording and provided written informed consent in accordance with the institution’s ethical guidelines. Each participant took part in a single interview. Interviews were recorded using two audio devices and lasted an average of 68 minutes with a range of 56 to 98 minutes. Researcher field notes were recorded immediately after each interview by the lead author. These field notes were observations the lead author noted during the interview for subsequent reference during the data analysis (Gill, Stewart, Treasure, & Chadwick, 2008).

Data analysis

The interviews were transcribed verbatim by the lead author producing 123,450 words of transcript. The transcripts were then inserted into the NVivo 11 software (QSR International Pty, Ltd, 2012) which facilitated the organisation and coding of the dataset. The analysis of the data was an iterative one, which involved the research team alternating between emic and etic readings of the collected data (Tracy, 2013). The emic approach was concerned with the emergent reading of the data and entailed the analytic coding of the data (Tracy, 2013). The etic analysis of the data developed the initial emic readings and considered the coaches' views in light of the existing GBA and CLT literature (Tracy, 2013). Throughout the sub-stages of the analysis a delicate interplay of emic and etic was utilised. The analysis process began by reviewing the transcripts for familiarity and accuracy. This process involved reading each manuscript, writing initial thoughts, provisional themes and correcting any transcription errors (Braun & Clarke, 2006). Open coding of transcripts followed, in which raw meaning units (quotations or paraphrased quotations representing meaningful thoughts) were organised into patterns of like ideas or thoughts representing codes. At this stage, additional axial coding was performed, in which codes developed at open coding facilitated re-reading through the data to identify links and relationships between codes. To facilitate this process, a Microsoft excel sheet was utilised to assess the relationships between different codes and raw meaning units side by side. This process facilitated the organisation of lower-order themes. For example, "time of the season influence on planning", "weekly session loading" and "GPS targets" formed the lower order theme of "strong influence of S&C on planning decisions". Following these stages, the lower-order themes, if they logically fit together, were grouped into higher-order themes. For example, "coach relationship with other members of management" and "coaches' knowledge of coaching theory" were grouped under the higher-order theme of "contextual factors". [Figure 1](#) provides a graphic representation of the analysis process. The research team then reviewed the categorisation of the data into lower and higher-order themes.

Trustworthiness

To assist the reader in forming an assessment of the trustworthiness of this research, the researchers adopted a critical friend approach to achieve rigour (Smith & McGannon, 2018). This involved a critical dialogue between the lead researcher and the second and third author. Within the data collection phase, the second author and lead researcher discussed journal notes, interview guide modifications and the conduct of the interviews. Throughout the

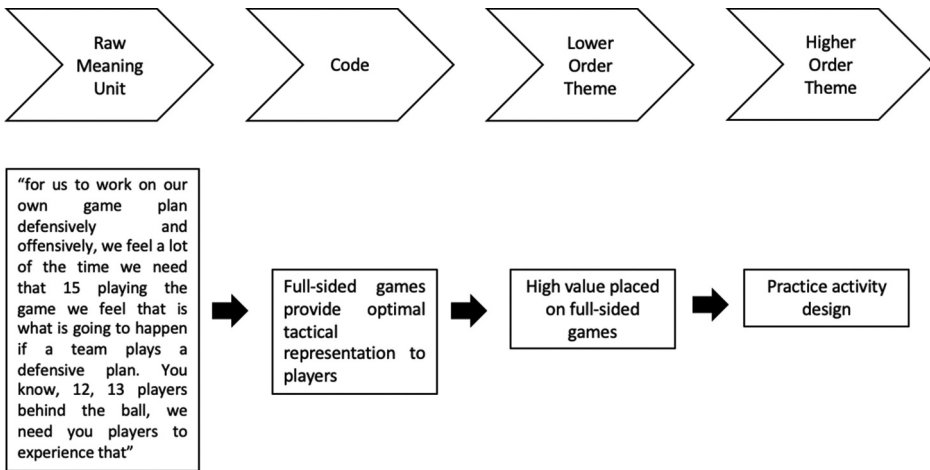


Figure 1. Example of the iterative analysis process from raw meaning unit to higher order theme.

data analysis process, regular meetings took place whereby the second and third author challenged the lead researcher's interpretations and decisions in the organising and interpretation of the data. This disputatious dynamic ensured that the role of critical friends was not to agree or achieve consensus but rather to encourage reflexivity by challenging each other's construction of opinion (Cowan & Taylor, 2016). For example, within the initial coding process, the lead author omitted coding raw meaning units relating to the psychological benefits coaches perceived from including isolated fitness blocks within their session plans. However, following conversations and comparisons with another member of the research team's analysis, a code was generated to reflect the perceived psychological benefits of isolated fitness. To assist this process, a reflective journal was utilised, documenting all changes and observations made and feeding these back to the research team for discussion on a regular basis. Other elements of reflexivity were present in the form of written memos throughout the coding process, acknowledging relationships, patterns, and comparisons between codes, which enabled the research team to integrate personal insights and thoughts (Charmaz, 2015). For example, the lead author's position as a coach meant it was necessary to assess and reflect how experiences and vulnerabilities as a practitioner coach may have impacted how the data was viewed. For methodological triangulation (Smith & McGannon, 2018), session plans were included within the interview. These plans facilitated recall for the coach, provided opportunities for contradictions between what was said and shown in plans, and enabled probing on specific strategies. The final point to consider in judging the trustworthiness of this research relates to the position and relationship of the lead author with the participants within the

study. The lead author's background as a fellow inter-county hurling coach (and not football) placed him in a privileged position to establish rapport with the participants and understand the context, jargon, and pressures of their coaching settings (Evans, 2006; Light & Evans, 2013). However, while this was a study strength, it was also necessary for the lead author to engage in reflection regarding his own values and vulnerabilities in coaching throughout the interview and the analysis process (Smith & McGannon, 2018) to enhance the credibility of the data and the resulting conclusions (Tracy, 2010).

Results and discussion

The aims of this study were to provide a rich description of a sample of high-performance Gaelic football coaches' planning practices and to critically evaluate these practices in light of the GBA literature and CLT. Planning was confirmed to be a multifaceted and complex process. Three major themes were developed through analysis of the data: (1) practice activity design, (2) sequencing of practice session content, and (3) contextual factors influencing planning (see Table 2). The results and discussion relating to these themes are presented in the following section.

Practice activity design

Pedagogical models such as GBAs promote the identification and development of tactical problems within the planning process (Mitchell et al., 2006). Tactical problems ensure purpose by directing coaches' session planning around an explicit tactical concept as opposed to an unstipulated collection of tactical ideas. For the most part, explicit tactical problems did not feature in coaches' session plans. Instead, coaches' session focus was dictated by their competitive games; identifying areas for improvement based on previous games, and then planning for upcoming opposition:

you're reacting to what has happened in the previous game, you're reacting to the next opposition and you're trying to make your games or whatever you're doing in training specific to that, to learn and add to what you've done in the last game, to improve for the next game. – Martin

Unlike in physical education settings where GBAs and tactical problems were originally proposed to cater for groups with varying experiences and expertise in sport, coaches in elite settings are dealing with experienced players likely to hold high levels of understanding in tactical concepts. Therefore, the coaches' approach in this study to base session plans on past/upcoming competition resulted in players

Table 2. Breakdown of higher and lower order themes for factors influencing coaches' planning practices.

Higher-order themes	Lower-order themes
Practice activity design	Dictated by previous and next games, rather than tactical problems
	Game-related activity central to planning
	Different games (full, small-sided, conditioned) used for different purposes
	The particular value seen in full-sided games
	Value in isolated fitness work
	Value in isolated skills work
Sequencing of the practice session	Video analysis strategically placed pre-session
	General lack of rationale for session sequence
Contextual factors	Collaborative planning by the management team
	The strong influence of S&C on planning decisions
	Innovative use of sport science data to support planning

being challenged by multiple tactical concepts within the one session thus differing from the narrower tactical problem/themed approach outlined within GBAs (Garcia Lopez, Contreras Jordán, Penney, & Chandler, 2009; Harvey & Jarrett, 2014; Pill, 2016). While accepting the need for coaches' session plans in this context to include a variety of tactical problems within one session, it is critical for coaches to support this approach by clearly outlining the tactical concepts and their accompanying principles of play to ensure purpose and understanding are achieved. An overt understanding of the purpose of each task, shared by the coach(es) and players, is critical to learning (Pill, 2015; Vinson, Beeching, Morgan, & Jones, 2017). However, for several coaches, this explicit detail was missing from their plans and from their articulation of the session design. Explicitly outlining the relative target concepts for the session can facilitate the coach's planning by

directing them towards planning activities that consolidate, refine and extend understanding of the various game concepts in action (Mitchell et al., 2006). Likewise, explicitly outlining the target tactical concepts for the session can facilitate players' learning by appropriately narrowing their focus (Pill, 2013). It is important that coaches are not uncompromising in their application of learning outcomes, as learning can take place outside of intended explicit learning objectives (Erikson and Erikson, 2019). Within GBAs, within-session dialogue between coaches and players plays a central role in confirming what the goals of the activity are, and what players need to do to achieve those goals (Light and Harvey, 2017). When facilitated well, this dialogue ensures that sessions are appropriately focused on players' learning, and not just on the coaches' pre-determined learning outcomes. Bearing this caveat in mind, appreciation of session learning outcomes is essential for effective GBA session planning.

As has been the case in other observational GBA coaching studies (Croad & Vinson, 2018; Light & Evans, 2010), coaches typically used game-related activities as the primary activity type within their session plans to address the areas identified from past performances and upcoming competition: "75% of the session is either conditioned games and then our game plan, how we are going to play and dealing with the opposition coming forward" (Hugh); "When it comes to planning sessions, games are a constant. The only time where games-based work wouldn't be a focal point in any session would be in our soft skills section at the beginning of a session" (Martin).

Coaches using games is not unique and the high value this group of coaches placed on the use of games reflects a recent growing trend in other invasion game sports towards games as the prominent practice session activity type (Hall, Gray, & Sproule, 2016; O'Connor et al., 2018). Coaches indicated using a variety of different game forms. However, a novel finding in this research was the universal favouring of full-sided games by coaches due to their perceived ability to closely represent the tactical and physiological demands of competition. Full-sided games were referred to as an activity using actual match play numbers (15 vs. 15) and standard pitch size dimensions (145 m x 90 m):

For me, the only thing that can really reflect what happens in match play is match play, you can't even replicate that in training. However, the closest thing to match play is an internal training match as such, the size of the pitch, the effort you are trying to get through, and the tactical dilemmas players face . . . Even half-pitch matches, 5 vs. 5, 5 vs. 4, they're all brilliant and hugely intense for short bouts of time, but they never reflect what will happen on a 145 by 90 pitch with 15 players going at it. - Declan

The coaches supplemented their use of full-sided games by incorporating sophisticated strategies such as mimicking opposition team characteristics, opposition systems and emphasising their own conditions; all of this happened within the full-sided context:

I would spend a lot of time in planning on picking teams, likely scenarios, and deciding opposition tactics. So you might introduce conditions to expose players to particular patterns of play they are likely to face. Picking teams, you might be wanting to see how some players are matching up against others . . . sometimes you might want to mimic how a team plays at the weekend, so sometimes you might have to pick your team separately, to make sure you have the right guys who understand the importance of their role of mimicking. - John

Coaches' reference to "conditions" and detailed planning of tactics, scenarios, and even personnel in their application of full-sided games reflects an intention to ensure games are purposeful and carry meaning (Pill, 2015). Meaningful learning occurs when the player is able to make sense of, and connect to what is to be taught, identify relevant knowledge and information, organise it into a coherent structure, and integrate it with other knowledge (Mayer, 2004). The coaches' inclusion of purposeful scenarios and conditions reflect efforts by the coach to achieve meaningful learning by *guiding* players towards relevant information (Memmert, 2015) as learning is not achieved by simply playing games (Metzler, 2011). Moreover, the coaches' focus on designing practices that mimic opposition characteristics can be seen as a deliberate attempt to afford players opportunities to recognise areas where they can create a favourable balance against the opposition system of defence/attack and gain a tactical advantage (Pill, 2014). Specifying such information in the practice task through the use of individual and collective conditions as seen by coaches in this study is likely to lead to better decision-making in-game time (Gorman, 2010).

In contrast to the relative absence of discussion on the use of full-sided games within the GBA literature, a significant body of research supports the use of small-sided modified/conditioned games (Harvey & Jarrett, 2014; Light, Harvey, & Mouchet, 2014; Serra-Olivares, Garcia-Lopez, & Calderón, 2016). Coaches also planned small-sided games, however, these games appeared to be used less frequently and were predominantly employed for fitness purposes:

There are other components like small-sided games, 7 on 7, yeah but not a huge amount. You certainly could use them from a fitness point of view. If you have a squad of 32/33 and you want to split them into two teams and run two or three four-minute games, it's fantastic for fitness and maybe that concept of moving ahead of the ball and supporting each other, and obviously, you have smaller numbers, which means you have more touches to the ball. That would be it, but

I would not get bogged down. I would not get bogged down doing 7 V 7 and 8 V 8 and 9 V 9 and 2 V 2 and 3 V 3. Do I do them? Yes, but it would be a small percentage of the time. - Senan

Coaches' sparse use of small-sided games suggests a low perceived value in these reduced game forms to reflect the tactical demands and decision-making elite senior players are likely to face in actual match play. However, research suggests that smaller games can have a multitude of benefits not just limited to fitness. For example, Davids, Araújo, Correia, and Vilar (2013) describe small-sided games as being useful to isolate particular tactical problems that occur in sub-phases of match play (i.e., 1 vs. 1, 4 vs. 3) consequently providing players with increased frequency to experience tactical problem solving, interpersonal communication and contextual variability through ongoing interactions with teammates, opponents, and task constraints. Notwithstanding these possibilities, there were few examples in this study of coaches' utilisation of small-sided games for the purposes described above. Coaches may seek to revisit and challenge their understanding of what they consider to be representative and channel new ways of integrating conditions in smaller sided versions to help achieve their tactical outcomes. Exposure to underpinning theory in this context may educate coaches on ways to reduce or increase tactical complexity (Mitchell et al., 2006) and attain representation (Renshaw & Chow, 2018) in reduced game forms. Such an approach may provide players with greater opportunities to succeed or be challenged than they may receive in the larger games preferred by coaches in this study (Tan et al., 2012).

Coaches highlighted the need to include other activities that they felt address specific shortcomings in game-based activities. For example, despite valuing the ability of game-related activity to develop fitness, all coaches factored in isolated fitness block work when planning their practice sessions:

Because sometimes you won't always get the value from a conditioning perspective out of game-based . . . you might with 60% of the group, you might with 80% of the group but sometimes you won't always, so basically if you want everyone to get a real isolated block of conditioning and regulate their fitness, let's get them doing it together. - Frank

There was considerable variation across coaches in terms of how isolated fitness activities were included in their plans. For some coaches isolated fitness was included in most sessions, whereas for others it was only deemed necessary in certain situations:

We look for 80% of what we were going to do in a game like. High speed running. So for example if the boys are doing 2K, high speed running we look for about, 1700/1600 metres. And I have this planned. I have A and B, I mightn't need B. I might have to top boys up at the end if they're standing behind the goals and they haven't got the ball for a while. - James

The other thing is from a psychological perspective, sometimes you can't beat players just really "digging in", understanding that they're in hole and that they've got to get through this (isolated fitness work) together. So I do think there is value with that. – Frank

The cases presented by coaches offer an interesting discussion point for the employment of GBAs and games in elite environments to provide for all of a team's physical requirements. Undoubtedly, a significant appeal in the adoption of game-related activity in team-based sports is based on their holistic nature and ability to produce positive outcomes across the tactical, technical and physical domains (Farrow, Pyne, & Gabbett, 2008; Gabbett, Jenkins, & Abernethy, 2009). There is a vast body of literature in the sports sciences which has weighed up the relative merits in using isolated fitness activities, drills and game-related activity (Delextrat & Martinez, 2014; Gabbett et al., 2009; Halouani, Chtourou, Gabbett, Chaouachi, & Chamari, 2014; Olthof, Frencken, & Lemmink, 2018). The consensus from this literature highlights the need for a joint approach in preparing the athlete from a physical perspective. However, a crucial element missing from this literature relates to the pedagogical element; specifically, the ability of the coach to design games. It may be possible that a coach employing sophisticated conditions within their game design may be able to achieve the necessary physical fitness demands as well as tactical and technical objectives. However, Frank offers an interesting case study in this regard as his position as a lecturer in physical education likely ensures familiarity with sophisticated game design tools, yet he highlights a deficiency in games to produce an appropriate collective physical response ("you might with 60% of the group, you might with 80% of the group but sometimes you won't always"). Seemingly, the strength of games as seen through the lens of CLT in providing the learner with the power to make decisions independently (Light, 2008), may carry some negative physical outcomes with certain players using this independence to hold back on physical effort within the game environment. In other elite coaching settings in which observational pedagogical research was conducted (Croad & Vinson, 2018; Evans, 2012), the place for isolated fitness within a GBA was not discussed. In elite settings, it may be the case that some allowance can be made for isolated fitness work (as is currently the case for isolated skills) for coaches who display strong pedagogical planning expertise and sound theoretical underpinning. However, coaches should primarily endeavour to achieve physical markers through sophisticated game-related activity designs as tactical and technical objectives may be achieved in conjunction with players' physical requirements (Gabbett et al., 2009; Light, 2013).

Another activity type that featured in all but one of the coaches' session plans was isolated skills practice. The utilisation of isolated skills practice tasks within GBAs should only be used when necessary and not as a starting

point (Metzler, 2011; Mitchell et al., 2006). Many of the coaches' application of isolated skills practice was in conflict with GBA guidelines whereby coaches implemented skills practice as a consistent preparatory task before entering tactical game-related activities:

I believe that to develop skills you have to do it in isolation. It's very well to develop skill in the white heat of battle, but if they don't have the basic technique in something like tackling then there's no point in going into game-based stuff because you've got to get the technique right first before you get the benefit out of game-based stuff. - Andrew

The coaches' strongly held views reflect a belief that the player's participation in games is insufficient to develop technical skills. While the authors acknowledge that there is merit in using isolated practice to assist the development of technical skills, it appeared that the coaches' preference to extensively use isolated practice to develop technical skills lacked a substantive rationale (Harvey, et al., 2010). In light of these findings, it is useful to consult with the work of Light and Evans (2013) on coaching habitus to understand coaches' views on this matter. Succinctly, habitus deals with how one's experiences can influence their practice. In their study of elite rugby coaches in the southern hemisphere, Light and Evans (2013) found that coaches' lack of consideration and cynicism for developing tactical knowledge and decision-making had clear implications for their dispositions towards a GBA with its emphasis on developing these aspects of the game. Similarly, in the current research, coaches' disregard for games to develop skill in conjunction with decision-making reflects a disposition at odds with a GBA. The application of isolated skills practice (as for any practice activity type) should be dictated by its merits to achieve a particular objective and its position within the game. While research regarding the capabilities of GBAs to develop technical skill remains equivocal (Kinnerk et al., 2018; Miller, 2015), guidelines related to the practice of technical skills through a GBA are clear and eleven of the twelve coaches' plans did not reflect GBA recommendations.

In contrast to the 11 coaches discussed in the previous paragraph, one coach was completely averse to the employment of any drills or isolated skills practice and provided specific examples on how he compensates for their exclusion within-session planning:

I would normally bring in skill-based work into game-based environments whereby the pressure is reduced from 100% which is match play down to maybe 50% and then increase it. So 5 v 2 and non-dominant kicking in a 40 by 40 grid, you get 6 of these grids on a pitch, have a 5 v 2, but then if you want to make it dominant, it's not 5 v 2 anymore, you make it a 4 v 3 because you're on your dominant foot. And that's how we do it. - Frank

As described above, Frank demonstrates an understanding of den Duyn's (1997) definition of skill; that is, a technique performed in context. There are strong links with GBA pedagogy in this coach's purposeful design. For example, the pedagogical principles of representation, exaggeration, and tactical complexity are evident. Specifically, the coach's altering of the attack to defence ratio coupled with the condition to perform a pass by prescribing one specific method adheres to what Werner, Thorpe, and Bunker (1996) suggested when proposing modification exaggeration. Moreover, scaffolding, as advocated within the CLT literature, is evident from the coach's thoughtful provisions to increase or decrease difficulty according to the players' progress in the task. With a scarcity of pedagogical research set in elite team settings and little discussion regarding the development of skill, the above example acts as an explicit attempt to develop skill whilst abiding by theoretical assumptions within a GBA. In light of the equivocal prior findings, there is an onus on researchers to provide greater clarity on how to develop skill within the context of games; more detailed guidance than the general principles currently provided in models. In contrast to other coaches in the study, Frank's disposition was likely guided by his role as a physical education lecturer and therefore his exposure to and understanding of pedagogy and theory is likely to have facilitated this approach to skill development.

Sequencing of practice session content

GBA scholars explicate a practice session sequence that begins with an initial game form to frame the coaching session (Metzler, 2011; Pill, 2013). Coaches are then required to carefully construct a sequence of interconnected tasks that either progress or simplify concepts ingrained within the initial game form. In this way, the coaching session may be viewed as a story with a purposeful sequence and clear relationship between tasks. In the context of the current study, the concept of sequencing did not feature, with many coaches providing a weak rationale for why they placed activities at certain points within their session plans:

but I suppose there's no real magical formula for why I have the sequence like that. It's just the structure of it that that's the way it would be. – David

Ahm, maybe it's a force of habit, it's not something I've thought long and hard about, no. No, it's maybe force of habit. - Hugh

The inattention by coaches towards the concept of sequencing practice activities within their planning process signals a significant deviation from GBA pedagogy. Limited guidelines exist in the GBA literature regarding sequencing as a pedagogical tool. GBA literature promotes the use of an

initial game form and highlights broad stages where tactical awareness, decision-making and skill execution should feature within a session (Bunker & Thorpe, 1982; Light, 2013; Metzler, 2011). However, there has been limited attention to more advanced aspects of sequencing such as the theoretical underpinnings of its employment, contemporary alternative strategies to purposefully sequence players' learning experiences and evaluating its potential to stimulate player reflection within a session. Thus, it is feasible that the omission of such detail has facilitated coaches failing to consider sequencing as a possibility to impact learning, as was the case amongst this group of coaches.

CLT acts as a suitable lens to initiate a discussion regarding the potential impact of sophisticated sequencing on player learning. In CLT, learning is seen as a process that involves interpretation in which there is no pre-given external reality (Light, 2008). CLT also views learning as an active process where the learner is encouraged to re-examine their experiences. By carefully sequencing activities to create connections between tasks, a coach may encourage the player to interpret and actively make sense of these connections. To supplement this process, the coach can facilitate periods within the session where players engage in an explicit discussion of the sequencing. Therefore, learning initially takes place through the game and is subsequently enhanced through dialogue (Butler, 2014; Light, 2013). To provide an example, a practice session plan with a carefully constructed sequence may invite the player to delve deeper into why a condition or zoned restriction was used in previous tasks and its relationship with the current task and overall session. This form of engagement by the player reflects the higher-level thinking and reflective processes advocated in the CLT literature (Richard & Wallian, 2005; Stolz & Pill, 2014). However, in the context of the current study, coaches' obliviousness to the pedagogical tool of sequencing, resulted in little connections between tasks and therefore a missed opportunity for players to interpret and make meaning.

While not aligned with GBA guidelines, the coaches did offer noteworthy contributions to the application of sequencing in sports coaching settings. Unlike many coaches, Frank, while not following the exact GBA sequence, was able to clearly rationalise his reasons for adopting his specific sequence of practice activities and defend his departure from GBA methods:

In terms of whole-part-whole, generally, you're trying to work out what is not working in the whole before you break it into the part and then rebuild it again. For me at this level, you should really know what you need to work on and improve on within a given session; if you don't, well then there's something wrong. – Frank

It is worth noting that the coach in question articulated both an in-depth understanding of GBAs and a strong case for why he does not employ a whole-part-whole concept as advocated in the GBA literature (Metzler,

2011; Pill, 2015). Specifically, GBAs were originally proposed for teaching and physical education environments (Bunker & Thorpe, 1982). In contrast to PE, high-performance sport gathers considerable pre-session information (e.g., familiarity with the squad due to significant coaching contact time) which is not available to the teacher (Bailey, 2005). This example illustrates how principles derived from physical education settings cannot be uncritically transposed to high-performance sport environments.

Another pre-session source of information available to coaches is video analysis. Although video analysis is a relatively new addition to sports coaching settings, it is considered an integral part of the coaching process (Groom, Cushion, & Nelson, 2012; Vinson et al., 2017). While coaches gave little thought to the sequencing of practice tasks within the session, they were very deliberate with their placement of the video analysis session prior to the coaching session. Typically, coaches included a video analysis session in their plans immediately prior to the commencement of the pitch session:

I always factor video analysis into my session planning. We'd normally position this before the practical session. It's normally based on the main things we are going to work on out in the pitch afterwards. Showing two, maybe three clips, having a discussion on it, "what do you see?" letting the players discuss it, put up the coaching points, sometimes I'd often show three clips of the game from the week before and they come up with their comments, lads what do ye see here. They've actually designed the training session that we are going to do out on the field. - John

The accounts from coaches in relation to their deliberate placement of video analysis to frame the subsequent coaching content, along with the rationale provided by Frank for his departure from an initial game GBA sequence, provides interesting points for GBA scholars to reflect on. Specifically, if the central purpose of utilising an initial game form is to provide context for the session to follow and to enable both players and coaches to raise their awareness of strengths and weaknesses, acknowledgement should be given to other innovative and contemporary methods (e.g., video analysis pre-session) of attaining such awareness. Therefore, flexibility should be granted to GBA sports coaches (who satisfy theoretical knowledge, squad familiarity, alternative methods) in the placement of practice activities within coaching sessions, whereby they are not bound to typical GBA activity order (i.e., game, part, game) but rather rationalise their session sequence by the diagnosis of desired outcomes. This recommendation comes with a cautionary note that coaches should not interpret this as a licence to abstract parts of a pedagogical approach and integrate into their own self-referenced approach (Cushion, 2013), but rather seeks

to stimulate an awareness and appreciation for new developments emerging outside of physical education contexts that may fit within GBA tenets.

The voice of the player was largely absent from these coaches' recollections of their session sequencing and in their overall planning process. There were occasional examples of players being actively involved in planning (e.g., as highlighted by John when describing a video analysis session: "they've actually designed the training session"). However, these examples were the exception. Indeed, there is a paucity of research highlighting players fulfilling a role in the planning of coaching sessions. Encouraging players to contribute to the planning of sessions may empower players (Woods, Rothwell, Rudd, Robertson, & Davids, 2021) and alleviate concerns of players holding a detached position in their learning process (Bampouras, Cronin, & Miller, 2012; Williams & Manley, 2016). Future research should further investigate how coaches can effectively include players within the co-design of practice (Woods et al., 2021).

Contextual factors

Management teams in elite sporting settings now contain a number of coaches and the involvement of these other coaches in the collaborative session design planning process was an important consideration for 10 of the interviewed coaches: "There may be five of us around a table and we all chat about what we want to work on." (Declan). However, while the other assistant coaches, the performance analyst and physiotherapist also had an input to planning, the Strength and Conditioning (S&C) coach had the strongest influence on planning. In many cases, the coaches' session plans were dictated by targets set out by the S&C coach, and the imposition of such targets was a source of frustration for many coaches:

I suppose nowadays you have S&C [strength and conditioning] fellas coming to you and saying "we need to cover 9k tonight, two and a half k of it has to be high sprint" so you know what I mean? I find that very hard to get into a training session or you know I don't think it's possible to get it into a training session. Look, we have S&C lads and they say we need to get 21 kilometres into them this week and you know it's very hard to get quality and keep it really high. At the end of the day they are coaching sessions, you have to stop and talk. - David

These findings indicate that the inter-management relationship between the S&C and football coach is a key and emerging area influencing practice session design, and ultimately coaches' pedagogical approach. The role of the S&C coach is now multi-faceted and a significant part of their role involves analysing, interpreting, and influencing decision-making through facts and figures (Stewart, Comfort, & Turner, 2017). Many coaches were

clearly frustrated by the difficulty of reconciling their pedagogical approach with S&C demands. This insight from coaches regarding the impact of the S&C coach and GPS metrics on activity design is novel to the coaching pedagogy literature. However, the broader coaching literature has highlighted the coach-S&C relationship as a growing area of potential conflict in sports coaching settings (Gillham et al., 2019; Laskowski & Ebben, 2016).

Notwithstanding many coaches' frustrations, there were some positive examples given of coaches utilising such S&C related data to inform their practice:

I would have a diary myself so I would fill in my session and then log it and then we would get the GPS report and we would file that alongside it so we would have the session and the breakdown of the session [i.e., different types of activities] and the GPS as well attached to it. So we would get a good idea over time of what the body has done [in each activity] and how it felt then and how they performed. To see if there is any sort of pattern. - Declan

Declan's embrace of GPS data to guide his planning design was the exception amongst this coaching sample. When applied as described above, S&C related data clearly holds important implications for coaches from a monitoring and injury prevention perspective (Higham, Pyne, Anson, Hopkins, & Eddy, 2016). However, coaches must be careful in their levels of commitment to S&C requirements during activity design, as the physical demand, while important, should not typically outweigh the technical and tactical emphasis of the task design. In many cases, it seemed that coaches conceded on their initial design elements to satisfy GPS metrics. Unlike in previous research (e.g., Martindale & Nash, 2013), it appears that many coaches followed guidelines relating to sports science unquestioningly. Further education and communication are two obvious action points that can be taken to bridge this gap (Brink, Kuyvenhoven, Toering, Jordet, & Frencken, 2018). The integration of games within training sessions is advocated within the S&C literature (e.g., Farrow et al., 2008; Gabbett et al., 2009) and athlete development models (LTAD Ford et al., 2011; YPD; Lloyd & Oliver, 2012), however, there is scope to provide additional guidance for coaches and S&C support staff to better cooperate on the design of more sophisticated games that deliver both tactical and physical session goals. Ultimately, coaches should not be consumed in their session planning by the need to fulfil certain GPS targets to the extent that their pedagogical approach is compromised.

Limitations

Notwithstanding the rich descriptions provided by this group of high-performance coaches in relation to their session planning processes that furthers our understanding of planning in team sports, a number of

limitations are acknowledged within this research. Firstly, as a single interview was conducted with each coach, coaches were not observed implementing the two session plans discussed during the interview. A study design that includes observation of coaches' implementation of session plans may offer further insight into the efficacy of coaches' planning process. Secondly, the study solely focused on the coaches' perspective of the planning process. Given the contributions of other coaching staff within the planning process, future research may consider gathering the perspectives of assistant coaches, performance analysts, S&C coaches, and physiotherapists to supplement the views of the coach. Such research could also include observation of the multiple members of the coaching team interacting during the planning process, to enable a better understanding of how coaches negotiate the use of multiple knowledge sources when planning. Thirdly, the generalisability of the study findings needs to be considered. While the study presents data which may reflect the planning processes of those in other high-performance team sports, the significant focus and influence of competition on coaches' planning in this study may not be as prominent in other contexts such as youth sport and therefore study findings should be interpreted accordingly.

Conclusion

This research has added to the literature by providing an in-depth description of the planning of coaching sessions within a high-performance team sport context. It has revealed planning to be a multifaceted and complex process that requires the coach to make many pedagogical decisions. Coaches provided a detailed rationale for the construction of the session content with their use of games and in particular use of full-sided games featuring prominently in session plans. Coaches provided sophisticated examples of conditions utilised within their activity design to suggest clear intentions to impact players' learning. The purposeful implementation of mimicking opposition characteristics (representation), overload offensive games to develop technical skill (exaggeration) and within-task scaffolding address a gap in the GBA literature by demonstrating the implementation of pedagogical principles in a high-performance team sport environment. Despite strong indications of coach engagement with pedagogy in their session planning, the findings revealed missed opportunities in the pedagogical planning process with coaches failing to provide explicit learning intentions for session plans, inattention to sequencing, and limited small-sided game designs. Coach engagement with underpinning pedagogical theory may instil a greater pedagogical responsibility for coaches when planning thus providing the coach with an increased awareness of possible strategies to include when planning. Accordingly, this study offers support

for the utilisation of CLT as a learning theory to guide and explain the decisions coaches make throughout their planning process. Few studies have overtly used CLT as a guiding theoretical framework. This research demonstrates the potential of CLT as an effective lens to understand GBAs, and how it also may be used to stimulate coaches' awareness to plan coaching sessions which engage the players in social and adaptive forms of learning. Coaches need to consider a substantial amount of information in advance to plan a session. However, not all of this information was deemed as facilitating coaches' planning, with many coaches expressing frustrations with the need to concede on initial planning ideas in order to satisfy physiological markers set out by S&C coaches. These findings are novel to the coaching pedagogy literature, highlighting the significant influence of the S&C coach and growing information coaches must factor into their planning. While these forms of information are an important part of the contemporary team sports coaching set-up, such information should not compromise the learning objectives of the session when designing the plan. Finally, the study presents a number of contemporary developments and perspectives, in particular relating to sequencing, for how pedagogical models such as GBAs may be updated to facilitate their application and uptake within high-performance coaching settings.

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