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An investigation of football coaches' experiences with the Game Sense Approach

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Abstract

Purpose: This research project aims to expand the understanding of a pedagogical approach known as the Game Sense Approach (GSA) within the context of football development. This study attempts to investigate four areas about this pedagogy that have either been unexplored or around which little information is available in the literature: (i) GS coaches' perceptions and the reasons behind their implementation of this pedagogy, (ii) the difficulties experienced during their transition from the traditional approach to the GSA, (iii) the GS coaches' session planning, designing and delivering, and (iv) their interpretations of their facilitative functions.

Methodology: To achieve the research aims, seven case studies were analysed from a phenomenological standpoint. Seven GS coaches with experience in the foundation and youth development phases were selected through snowball sampling. Data were collected through semi-structured interviews and consequently subjected to a reflective thematic analysis that took place on a semantic level.

Results: The results of this study are extensive and cover different domains of the GSA. The key concepts that emerged from the data were: the role of emotions in the learning process, the transition from the traditional approach to the GSA, the concept of effectiveness, shaping situational concepts to facilitate learning, nurturing perceptual-cognitive skills to develop problem-solvers, the pedagogical importance of mistakes, and the necessity to learn.

Conclusion: This study sheds light on the coaches' transition from the traditional approach to GSA and highlights the coaches' necessity to favour players' acquaintance with this approach. The results of this study highlight the concept of effectiveness that informs the GSA coaching practice in line with its systemic and complex nature. Finally, this study evidences the similarities between the GSA and the Constraint-Led approach in terms of coaching practice and facilitative coaching functions, and it emphasises the need for further research.

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1. Introduction

This research project aims to deepen the knowledge around a pedagogical approach known as the Game Sense Approach (GSA) within the context of football development. The GSA is a learner-centred pedagogy that aims to facilitate athletes' learning by nurturing their game sense (tactical intelligence) through their interactions with the game environment (Pill, 2014; SueSee, Pill, and Edwards, 2016; Vinson *et al.,* 2016). The functions exercised by the coach and the learning theory underpinning this modern pedagogical approach are strongly in contrast with the widely used traditional coaching approach (Light, 2008; Light, Harvey, and Mouchet, 2014; Reid & Harvey, 2014). However, particular areas requiring further investigation emerged from a review of the literature concerning the GSA and informed the conduction of this research. For instance, Reid and Harvey (2014) highlighted the need for further research to explore how coaches operate within this methodology in light of the absence of a well-defined theoretical model for the GSA. Therefore, this study sought to enrich the existing literature with regards to the coaches' perspective of the GSA, their role within it, the practical implementation of it, and their process of adaptation from the traditional approach. By investigating these areas, this study attempts to provide the literature with advanced knowledge regarding this pedagogy.

2. Literature Review

Contemporary research around pedagogy within sports and physical education settings suggests that learning is a complex process that does not follow a logical course, but it occurs as a result of the connection among individuals and the environment (Cushion, 2013; Chow & Atencio, 2014; Renshaw & Chow, 2019). Nevertheless, the most utilised pedagogical approach, the 'traditional approach', is grounded on linear learning theories such as behavioural learning (Cushion, 2013; Vinson *et al.*, 2018; Stone *et al.,* 2020). This approach is grounded on the notion of learning as the linear process of knowledge transmission from expert individuals to learners (Light & Robert, 2010; SueSee, Pill, and Edwards, 2016). Specifically, traditional coaching is a coach-centred approach whereby athletes are engaged in highly repetitive and decontextualised practices following a linear progression of complexity designed to master technical skills before applying these within the contextual environment (Light, 2004; Holt, Ward, and Wallhead, 2006; Pill, Penney, and Swabey, 2012; Pill, 2016; Karagiannis & Pill, 2017; Stone *et al.,* 2020). The traditional technical practices aim to teach learners the execution of a conceptualised movement pattern for each technical gesture through the coaches' directive instructions and following a demonstration-replication process (Light & Robert, 2010; Light, Harvey, and Mouchet, 2014; Pill, 2014, 2015; SueSee, Pill, and Edwards, 2016). Pill (2016) suggests that these practices are a result of coaches' attempt to oversimplify contextual tasks by removing the cognitive process that would instead occur within the competitive environment to facilitate athletes' task achievement. However, Cushion (2013) put forward that this coach-centred and technique-based pedagogical approach 'objectifies players', as it fails to account for cognitive skills, which are believed to be innate. As a result, traditional coaching has been argued to nurture athletes who are unable to connect practice to gameplay and to deal with the complexity of invasion games (Light, Harvey, and Mouchet, 2014; Kinnerk *et al.*, 2018). This view is also supported by Pill (2014) who asserts that traditional coaching cannot provide athletes with the necessary information to effectively implement technical skills within the several situational possibilities of gameplay.

In contrast with the dated linear approaches, modern pedagogies conceive athletes' learning as an ongoing process that is shaped by situational contexts (Hager & Hodkinson, 2009; Spencer, 2011). Therefore, this concept has laid the foundation for

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several learner-centred pedagogical approaches which have been recently implemented in sports coaching (Cushion, 2013; Newman, Alvarez, and Kim, 2017; Kinnerk *et al.,* 2018; Renshaw & Chow, 2019). Some of the non-linear pedagogical methodologies applied to sports coaching to be analysed by the literature are Game Centred Approaches (GCAs). GCAs are characterised by the contextualisation of learning through game-related activities aimed to develop athletes' problem solving and tactical awareness and whereby learners are empowered and facilitated by the coach along their learning pathway (Cushion, 2013; Harvey & Jarret, 2014; Kinnerk *et al.,* 2018). The GCAs analysed by contemporary research are: Teaching Games for Understanding, Tactical Game Model, Tactical Decision Learning Model, Play Practice, Play with Purpose, Games Concept Approach, Invasion Game Competence Model, and Game Sense Approach (Harvey & Jarrett, 2014; SueSee, Pill, and Edwards, 2016). Within invasion games, the game-related activities implemented in GCAs are often manipulated by the coach through multiple environmental and task constraints to accentuate specific aspects of the game and nurture athletes' tactical awareness (Breed & Spittle, 2011; SueSee, Pill, and Edwards, 2016). This aspect of GCAs is one of the key similarities with another innovative pedagogy such as the Constraint-Led Approach, which greatly emphasises the importance of the individual, task, and environmental constraints towards athletes' development; however, unlike GCAs, Constraint-Led Approach is grounded on a theoretical model of motor behaviour (Renshaw & Chow, 2019). Regardless, the definition of GCAs is further expanded by Light (2013), who put forward that GCAs endorse the creation of a supportive environment where coaches facilitate players' development through a questioning activity aimed to develop problem-solving skills and nurture decision-makers (Kinnerk *et al.,* 2018). Nevertheless, Cushion (2013) suggests that the scarce popularity of GCAs among the coaching community could be conditioned by the several assumptions around these pedagogical approaches. Numerous coaches indeed believe that GCAs merely consist of discovery learning whilst the development of technical skills is disregarded and coaches seldom diversify their coaching styles (Cushion, 2013). Consequently, whilst on one hand coaching education courses do not facilitate the correct understanding of GCAs (Harvey & Jarrett, 2014; Kinnerk *et al.,* 2018), on the other the aforementioned assumptions around GCAs can lead to a very limited and passive coaching practice (Cushion, 2013). Besides, further research around these pedagogical approaches within the sports coaching context is required,

since some aspects such as the effective development of technical skills within these holistic pedagogies remain unclear (Cushion, 2013; Harvey & Jarrett, 2014; Kinnerk *et al.,* 2018).

The Game Sense Approach (GSA) is a Game Centred Approach developed in the mid-90s by Rod Thorpe and the Australian Sports Commission as an evolution of Teaching Games for Understanding (TGfU), originally designed by Bunker and Thorpe (1982) for physical education (Light, 2004; Pill, 2012). This approach has recently found an application within invasion games such as rugby and football, leading to multiple sport governing bodies to incorporate it within their coaching education programmes (Reid & Harvey, 2014; Karagiannis & Pill, 2017). Light, Harvey, and Mouchet (2014) assert that among the GCAs which originate from TGfU, the GSA is the most appropriate methodology for sports coaching. Nonetheless, unlike TGfU, the GSA is not characterised by a defined pedagogical model and it is concerned with athletes' tactical understanding development rather than their acquaintance with new games within physical education (Light, Harvey, and Mouchet, 2014). Vinson *et al.* (2016) define the GSA as a constructivist pedagogical approach that emphasises the development of game sense by creating a player-centred environment where athletes' learning is facilitated by the coach's questioning activity and the contextual nature of the environment itself. Furthermore, the GSA seeks to nurture self-motivated athletes through the implementation of game-related activities as the main form of practice (Pill, 2014; SueSee, Pill, and Edwards, 2016). The underpinning theory which characterises this pedagogy among other GCAs is the complex learning theory (Light, 2008; Light, Harvey, and Mouchet, 2014; Reid & Harvey, 2014). The complex learning theory suggests that learning cannot be divided into parts as it is a transformative, unpredictable, and continuous process through which learners play an active role (Light, Harvey, and Mouchet, 2014; Chow & Atencio, 2014). Within the framework of complex learning theory, learning occurs as a consequence of the adaptation to the environmental constraints, which is highly influenced by one's foregoing knowledge (Light, Harvey, and Mouchet, 2014). Therefore, as suggested by Chow and Atencio (2014), to achieve a learning outcome in a complex game like football, coaches must guide players to analyse the game environment from different viewpoints rather than conveying knowledge to them.

The dynamic complexity of the game of football indicates the interconnection between players' perception and movement (Farias *et al.*, 2019). Within the game context, movements produce information that athletes perceive, and which inform their subsequent movements in a continuous perception-action cycle (Pill, 2014; Renshaw & Chow, 2019). This concept, known as perception-action (or information-movement) coupling, is affected by several external and internal situational variables and it must be considered as the result of the interaction between the individual and the environment as well as the social interactions between players (Gibson, 1979; Light, 2013; Chow & Atencio, 2014; Harvey & Jarrett, 2014; Pill, 2014; Light, Harvey, and Mouchet, 2014; Renshaw & Chow, 2019; Farias *et al.*, 2019). In light of the above, the GSA contrasts the traditional approach's reductionist epistemology (Light, Harvey, and Mouchet, 2014) by aiming to develop players' perceptual-cognitive skills in an attempt to nurture 'thinking players' (Pill, 2016). This outcome is achieved via coaching sessions where skills are developed through game-related activities, small-sided and designer games following a non-linear complexity continuance (den Duyn, 1997; Breed & Spittle, 2011; Light, 2013; Pill 2015). Research suggests that the development of cognitive skills such as decision-making cannot be directly taught by coaches, as these are autonomously developed by players through deliberate play activities that simulate the contextual conditions of the game (Light, Harvey, and Mouchet, 2014; Galatti *et al.,* 2016). The application of decision-making within game contexts where players are under pressure and have limited time to make decisions is determined by their consciousness-in-action, which relies on athletes' previous contextual experiences (Light, Harvey, and Mouchet, 2014). Consequently, GS coaches' abilities to manipulate the learning environment through tasks and constraints to replicate specific and realistic aspects of gameplay is paramount for athletes' development (Chow & Atencio, 2014; Farias *et al.*, 2019). The importance of tactical intelligence is emphasised by Pill (2014; 2015) who suggests that players should be taught to read (perceive), react (understand) and respond (movement behaviour) within any game situation. Therefore, the GSA allows players to independently develop perceptual abilities, which are strong predictors of success within football (Light & Fawns, 2001; Light, 2004). As further evidence of the essentiality of perceptual abilities, research found that players who reached the elite level in German football resulted being those who were longer subjected to deliberate play activities throughout their development phase (Light and Fawn, 2003; Horning, Aust, and Gullich, 2016).

Within the GSA, the coach's function significantly diverges from the traditional approach on their pedagogical functions and on the configuration of training sessions as outlined by extensive research (Light & Robert, 2010; Cushion, 2013; Light, 2013; Reid & Harvey, 2014; SueSee, Pill, and Edwards, 2016; Karagiannis & Pill, 2017). While traditional coaching is a systematic approach that separates the performance components to achieve athletes' development, the GSA rejects this Cartesian and systematic view and it embraces a holistic perspective founded on the inseparability of technical, tactical, social, and psychological performance components (den Duyn, 1997; Chow & Atencio, 2014; D'Arrigo, 2015; Kelly, 2017). Nevertheless, research around the GSA and GCAs tends to focus on how these approaches facilitate the development of tactical understanding and it does not attempt to explain how technical development is attained by GS coaches (Kinnerk *et al.,* 2018). The game-related activities delivered within this coaching pedagogy have a tactical dimension regardless of the overall session's aim (Light 2004; Reid & Harvey, 2014). Relevant literature indeed suggests that GS coaches seek to develop players' off-the-ball tactical behaviours aimed to handle the complexity of the game (Light, 2004; Harvey & Jarrett, 2014; Kinnerk *et al.*, 2018). An example of how this is achieved within GS pedagogy is provided by Pill (2014) who introduces the concept of Effective Play Space (EPS), which refers to the way players can affect the game's dynamics by creating advantageous spatial configurations of play through their movements off the ball. Specifically, the application EPS can enhance players' understanding of the continuous interconnection between attack and defence (Pill, 2014). Consequently, queries on whether coaches should be tactically minded to effectively develop thinking players arise from the current literature around the subject. Researchers argue on whether coaches should rely on the exclusive use of deliberate play activities (Pill, 2012), or utilise technical and skill practices within the non-linear Whole-Part-Whole (WPW) coaching method of practice (Reid, 2003; Pill, 2013; SueSee, Pill, and Edwards, 2016; Kelly, 2017). Besides, a lack of consideration regarding the coach's role when planning, designing, and delivering the GSA within the literature has also been highlighted by Reid and Harvey (2014).

A GS coach acts as a facilitator who guides players through their learning process (Light, Harvey, and Mouchet, 2014; Karagiannis & Pill, 2017; Kelly, 2017; Kinnerk *et al.,* 2018). This facilitative task is achieved through the establishment of a learning

environment whereby the coach empowers athletes to encourage collaboration and undertakes questioning activities to stimulate players' critical reflection and tactical understanding (Jones, Morgan, and Harris, 2011; Light, 2013; Chow & Atencio, 2014; Light, Harvey, and Mouchet, 2014; Vinson *et al.,* 2016). Collaboration and player empowerment are two paramount aspects underpinning the efficacy of this pedagogical approach as they allow the development of team cohesion and favour athletes' intrinsic motivation and enjoyment (Harvey, 2009; Harvey & Jarrett, 2014; Ryan & Deci, 2017). Questioning activities in the GSA are carried out using Q&A and/or guided discovery coaching styles, which promote interactions among participants and coaches and aim to encourage players to reflect in action and ensure their engagement within sessions (SueSee, Pill, and Edwards, 2016; Karagiannis & Pill, 2017). An empirical study by Vande Broek *et al.* (2011) found that athletes who were subjected to an inquiry-based coaching style achieved greater tactical improvements than athletes who were coached through a teacher-centred approach. In light of these findings, it is crucial for GS coaches to know when and how to ask purposeful questions to accomplish athletes' meaningful learning and their evolution into independent thinkers (Jones & Turner, 2006; SueSee, Pill, and Edwards, 2016; Kinnerk *et al.*, 2018). Nevertheless, not any open-ended question can effectively stimulate athletes' reflection (SueSee, Pill, and Edwards, 2016). Players might indeed experience disgruntlement or answer superficially if the coach's questions are not relevant or engaging (Brooker *et al.*, 2000; Kinnerk *et al.*, 2018). On the other hand, Smith and Cushion (2006) put forward that elite coaches who implement the GSA excel at alternating observation to questioning, as players should not be overloaded with information. Therefore, coaches should ask questions grounded on athletes' previous actions, because reflection is often initiated by reminiscence (SueSee, Pill, and Edwards, 2016; Vinson *et al.*, 2016). Nonetheless, research suggests that some coaches who utilise the GSA tend to guide players towards a pre-determined answer to a given tactical situation and use the questioning activity to inform the validity of the answer (SueSee, Pill, and Edwards, 2016; Pill, 2016). In contrast, other coaches use a less limiting style which encourages players to come up with innovative and unplanned solutions, hence stimulating their creativity (Light, 2004). Given the foregoing, it could be argued that within the GSA, coaches implement their role of facilitators up to different extents and it is not clear how these can impact players' development nor as for the principles underpinning the implementation of a specific

style over another. GS coaches are indeed assumed to exclusively implement inquiry-based coaching styles (Cushion, 2013), and it is not clear how the enactment of different styles is implemented within the GSA.

Extensive research suggests that coaches who abandon the traditional approach in favour of the GSA require a substantial change in their coaching practice from the mere manipulation of players to the manipulation of the learning environment (Light, 2004; Light & Robert, 2010; Cushion, 2013; Jones & Turner, 2016; Kinnerk *et al.*, 2018). As a result, it is often significantly difficult for a coach to move from the traditional approach to the GSA (Light & Robert, 2010; Cushion, 2013; Kinnerk *et al.*, 2018). The foremost obstacle within this transition is certainly the deeper technical and tactical knowledge that GS coaches need to comprehend the complexity and dynamics of the game (Cushion, 2013; SueSee, Pill, and Edwards, 2016). Besides, coaches should develop their pedagogical understanding to recognise when and how to practise their facilitative function to attain players' meaningful learning (Cushion, 2013; SueSee, Pill, and Edwards, 2016). The necessity to empower athletes in decision-making and redistribute authority in the GSA are two elements that inevitably affect coaches' hierarchical position over players due to the less autocratic role that they would be required to play compared to the traditional approach (Light & Roberts, 2010; Cushion, 2013; Kinnerk *et al.*, 2018). Furthermore, there is a widespread tendency to shape the training process to win competitions at the detriment of players' development and self-organisation, a tendency that provides fertile ground for the application of the traditional approach where the coach holds control (Cushion, 2013; Harvey & Jarrett, 2016; Galatti *et al.*, 2016). In view of the foregoing, further investigation around the way coaches manage this transition and whether or not some principles of traditional coaching affect their GS coaching practice, is therefore required.

The implementation of the GSA, as well as other GCAs, has been found beneficial for elite athletes who seemed to feel greater motivation within game-based and supportive learning environments which facilitate the attainment of optimal performance (Charlesworth, 2002; Evans & Light, 2008). Nevertheless, given the bespoken gaps and inconsistencies within research, the review of modern literature has identified areas requiring further investigation: (i) GS coaches' perceptions of this pedagogy, (ii) GS coaches' transition from the traditional approach to the GSA, (iii) how GS coaches plan, design and deliver their sessions, and (iv) the way GS coaches interpret their

facilitative roles. Besides, the absence of a well-defined model for this pedagogical approach (Light, Harvey, and Mouchet, 2014) could provide fertile ground for football coaches to develop their interpretations of the GSA. Therefore, the following research project seeks to enrich the knowledge around the GSA through the analysis of these four aspects via seven phenomenological case studies.

3. Methodology

The following research project had an exploratory purpose as it attempted to deepen the understanding around a subject that has not been plainly delineated and about which limited knowledge is currently available in the literature (Saunders, Lewis, and Thornhill, 2007; 2009). Given the unmeasurable nature of the data considered in relation to the research aims and the choice to analyse the research topics from the coaches' perspective, a qualitative methodology fell in line with the purpose of the study and the research design. Qualitative research is often deemed to be a suitable methodology when the design of the research itself is exploratory (Saunders, Lewis, and Thornhill, 2007). Therefore, an extensive description of the research design and the procedure of this study are outlined in the following sections.

3.1. Philosophical Positioning

A research paradigm delineates the philosophical assumptions underpinning the research project and it contributes to reaching a comprehensive rationale for the use of a given qualitative method (Bleiker *et al.,* 2019). The research paradigm also describes the study's philosophical positioning with regards to the adopted standpoint around the nature of reality (ontology), the way knowledge is acquired (epistemology), and the role of values within research (axiology) (Saunders, Lewis, and Thornhill, 2009; Fisher *et al.,* 2010; Bleiker *et al.,* 2019).

This study was undertaken from a relativist ontological perspective grounded on the existence of different realities shaped by individuals' perceptions and past experiences as opposed to the realist view of one unique reality existing independently of the interpretation given by the human mind (Levers, 2013; Smith & Sparkes, 2013; Nelson, Groom, and Potrac, 2014). Along with this ontological positioning, this research embraces a subjective epistemology as it perceives knowledge as unavoidably conditioned by the individual who unilaterally binds a meaning to objects or facts (Burke Johnson & Onwuegbuzie, 2004; Saunders, Lewis, and Thornhill, 2009; Levers, 2013; Nelson, Groom, and Potrac, 2014). Furthermore, given the non-objective nature of the data, which required the researcher to discern the information worthy of mention throughout the data collection and analysis processes, the axiological stance adopted is value bound (Saunders, Lewis, and Thornhill, 2009). Therefore, in light of the

research aims and the philosophical assumptions considered thus far, this project adopted an interpretivist paradigm as it delved into the subjective meanings that participants gave to their use of the GSA and their experiences with it (Saunders, Lewis, and Thornhill, 2009; Fisher *et al.,* 2010; Gratton & Jones, 2010; Levers, 2013).

3.2. Research Approach

Given the exploratory purpose of this research, an inductive research approach was adopted as there is no existing theory to underpin the classification of data within pre-determined themes (Nelson, Groom, and Potrac, 2014; Braun & Clarke, 2016). Besides, the scarce information in the literature around the aspects of the GSA enquired in this study determined the impossibility to formulate hypotheses on the findings. Therefore, the inductive approach of this research project sought to generate knowledge through the description of the themes, patterns, and significant aspects that emerged from the data analysis process throughout a cross-sectional time horizon (Thomas, 2006; Smith & Sparkes, 2013; Nelson, Groom, and Potrac, 2014). Specifically, the inductive approach embraced by this research was phenomenology, a philosophical enquiry that drives the researcher to investigate the meaning behind a phenomenon through the participants' experiences in relation to the context of the phenomenon itself (Thomas, 2006; Gratton & Jones, 2010; Randles, 2012; van Manen, 2017).

3.3. Research Strategy

In line with this study's interpretivist paradigm, the research strategy implemented was the analysis of seven qualitative case studies. Case studies rely on the study of 'units of analysis' within the specific contexts where they take place (Saunders, Lewis, and Thornhill, 2009; Gratton & Jones, 2010; Fisher *et al.,* 2010; Rashid *et al.,* 2019; Priya, 2021). In this project, the unit of analysis was each participant's coaching experiences in relation to the different circumstantial characteristics of the contexts whereby they operate. Furthermore, this strategy allowed the researcher to investigate the connections amidst variables as opposed to a quantitative measurement of these (Fisher *et al.,* 2010). Nevertheless, a significant issue regarding case study research could concern the generalisability of its outcomes. Priya (2021) indeed suggests that although the results of qualitative case studies can be generalised, this research

strategy is not adequate for theory building, which relies on empirical validation. Therefore, the analysis of these case studies aimed to construct knowledge around the implementation of the GSA in football rather than attempting to build a universal theory related to this pedagogy.

3.4. Participants and Sampling

Due to the lack of a census or quota of the subgroup of GS coaches within the coaching community, non-probability sampling was used (Saunders, Lewis, and Thornhill, 2012; Moser & Korstjens, 2018). Besides, the difficulty of identifying a sampling frame informed the decision to adopt snowball sampling to select participants. Snowball sampling consists of participants being selected through the referral of previously recruited participants, and it is implemented when the elements of a population are difficultly identifiable (Fisher *et al.,* 2010; Gratton & Jones, 2010; Saunders, Lewis, and Thornhill, 2012; Moser & Korstjens, 2018). Thus, three participants were initially selected, then an overall sample of seven participants was reached through snowball sampling. This sample size was deemed appropriate given the timeframe of nine months for the making of this study and it is in line with the suggested sample sizes for qualitative research (Guest*,* Bunce, and Johnson, 2006; Braun & Clark, 2013). All the participants included in the sample are based in Italy where the use of the GSA has incremented over the years and therefore potential participants were more accessible to the researcher. In an attempt to maximise the validity and generalisability of the data collected, the sample was created by selecting participants according to the following criteria:

- Participants must have at least three years of experience in football coaching.
- Participants must have worked at grassroots or sub-elite football level.
- Participants' training sessions are aimed to consist of at least 70% of deliberate play activities or must they consciously be implementing the GSA.
- Participants must have coaching experience with teams in the foundation phase (age 5-11) and/or the youth development phase (age 12-16) using the GSA.
- Participants must have implemented the 'traditional' coaching approach within their career.
- Participants must be over the age of 18.

In light of the absence of a theoretical model for the GSA (Light, Harvey, and Mouchet, 2014), these criteria sought to identify GS coaches with relevant coaching experience, who have previously implemented the traditional approach and who worked across different levels of football development. Furthermore, since research suggests that some coaches implement the GSA without being familiar with it (Reid & Harvey, 2014), those who utilise a large number of deliberate play activities in their sessions were also considered suitable for this research.

3.5. Data Collection and Procedure

Upon receiving ethical approval from the ethical board, three potential participants were contacted via email and illustrated with the aims, procedure, and ethical implications of the study. The emails sent to participants included an information sheet, an informed consent form and a link to access an online questionnaire designed to verify whether participants met the selection criteria. Once they agreed to take part in the study, signed the informed consent form and filled the online questionnaire, they were asked to forward the email to any coach who could be suitable for this research. Potential participants contacted through snowball sampling who wished to take part in the study filled the online questionnaire, signed the informed consent form and consequently sent it back to the researcher. As a variety of potential participants expressed their interest in taking part, the researcher identified the most suitable participants based on the results of the online questionnaire and individually contacted each participant to arrange interviews.

Semi-structured interviews were held to obtain thorough insights on the coaches' beliefs that affect their GS coaching. Specifically, phenomenological interviews were used to understand how participants perceive and deliver the GSA. Besides, the participants were inquired about their transition from the traditional approach to the GSA. To maintain a phenomenological stance during the interviews, the researcher often used detail-oriented and elaboration probes to achieve contextualisation, as the context is a fundamental element of experiences from which meaning is gained (Bevan, 2014). Semi-structured interviews were deemed as the most appropriate data collection method given the interpretivist paradigm of this study and its phenomenological stance. The implementation of this research method in sports coaching is supported by Nelson, Potrac, and Groom (2014) who assert that interviews

are valuable tools to understand what coaches do and how they interpret the coaching process. Semi-structured interviews were preferred over other qualitative methods so that participants could share the beliefs that shape their coaching and outline their interpretations of GS coaching (Sparkes & Smith, 2013). Thus, the researcher ensured that all the aspects related to the research aims were discussed in each interview while enabling participants to shift the conversation to unanticipated subjects that could provide this study with meaningful findings.

3.6. Ethical Considerations

Ethics Number: LP151220GG

Upon recruitment, participants were presented with a comprehensive information sheet that outlined the purpose of the study, its procedure, and the way data would be treated. Within the information sheet, participants were also guaranteed that their anonymity would be held through the use of pseudonyms. Besides, to retain anonymity among the participants, these were emailed individually upon selection. The participants' data protection during recruitment through snowball sampling was achieved by asking participants to forward the recruitment email to any GS coaches whose knowledge and experience could benefit this study. By doing so, additional participants who wished to contribute to this study contacted the researcher and their personal data were not divulgated by other participants. Furthermore, to preserve confidentiality, the data were safely stored in a password-protected hard disk accessible only by the researcher and the project supervisor.

In order to minimise the risk of any kind of physical harm or exposure to COVID-19 that the researcher and the participant could be subjected to, online interviews took place using Microsoft Teams. Any risk of psychological harm to participants was avoided as, prior to registering their consent, they were informed of their right to withdraw at any time. The procedure and nature of the interview were outlined in advance in the information sheet so that participants' chances to experience stress during interviews could be reduced.

Voluntary participation could have been a significant ethical concern for this project due to the relationship between the researcher and some participants. Therefore, participants were presented with the opportunity to take part in a study, the results of which could potentially enhance their coaching knowledge around the GSA. Once participants were fully aware of the project's procedure and ethics, their informed consent was gained. After data analysis and before the completion of the research, participants were sent the results of the study to ensure that none of the data they shared was misused or misinterpreted.

3.7. Data Analysis

The data collected through video interviews were transcribed verbatim and a digital dataset was built. Data analysis was conducted through thematic analysis, by grouping codes into different patterns of shared meaning (Braun & Clarke, 2006; 2016). This analysis was carried out following Braun and Clarke's (2006) step-guide to thematic analysis which involves familiarisation with the data, the generation of initial codes, the generation of themes, the review of themes, the definition of themes, and the final production of the report. The approach to thematic analysis implemented in this research was reflexive as the coding process was unstructured and themes emerged from the interaction between the researcher and the data (Braun & Clarke, 2019; Trainor & Bundon, 2020). Within the framework of reflexive approaches, the thematic analysis applied was inductive as it did not build on existing theory for the classification of data. Furthermore, data analysis had an experiential orientation as this study aimed to comprehend coaches' perception and understanding of the GSA through the analysis of their coaching practice and experiences. This process was conducted according to the interpretivist paradigm of this research, which sought to understand the meaning assigned by participants to their coaching practice from the perspective of the participants themselves. Therefore, the generation of themes was carried out prevalently on a semantic level in an attempt to avoid misinterpretations and therefore evade the risk to report an altered version of the reality experienced by the participants. Nevertheless, the nature of the themes created in this project rose beyond that of domain summary themes, which are limited to assemble data around a shared subject, as themes were constructed based on the diverse meanings given to a particular topic (Braun & Clarke, 2019).

3.8. Methodological Rigour

It is hoped that the following project is critiqued from the interpretivist standpoint of the project itself, as suggested by Denzin (2010). The methodological rigour of qualitative studies where data is gathered from interpersonal contexts depends on the researcher's ability to maintain steady levels of self-criticism, reflexivity and self-monitoring throughout the collection and analysis processes (Freshwater *et al.,* 2010). In addition, an appropriate mean of evaluation for this project is provided by Finlay's (2006) five criteria to critique qualitative research:

- *Clarity:* The coherency and clarity achieved throughout the research.
- *Credibility:* The extent to which the researcher's interpretation of the data can be considered plausible in relation to the evidence provided to support the findings.
- *Contribution:* The measure to which the project contributes to enhance the knowledge around a research topic and its ability to lay the foundation for future research.
- *Communicative resonance:* The power that allows the study to connect with the readers' experiences and understanding as well as defy their thinking around the topic.
- *Caring*: The ethical integrity displayed by the researcher in handling data gathered within interpersonal contexts as well as the respect shown towards participants' rights and safety.

4. Results

The results are presented in four overarching dimensions in line with this study's research aims: the coaches' perceptions of the GSA (Table 1), the coaches' transition from the traditional approach to the GSA (Table 2), GS coaching practice (Table 3), and the coaches' interpretations of their roles of facilitators (Table 4). The themes that emerged from the interaction among the researcher and the data are displayed through the participants' quotations. Such a mean of representation allows the coaches' personal experiences to arise whilst embodying each theme.

4.1. The coaches' perceptions of the GSA

This dimension was generated from the themes concerning the reasons behind participants' implementation of the GSA. The three themes that emerged were: 'a pedagogical approach for modern times', 'players as protagonists within football's unpredictability', and 'the role of players' emotions in learning' (Table 1). With regards to the first theme mentioned, the codes were grouped in two subthemes regarding the necessities to understand modern young players and to use a pedagogical approach to replicate the 'street experience' that nurtured previous generations of footballers. Chris and Jez spoke about modern young players:

> *Chris: Our knowledge, approach, methodologies, and training methods that we implement with our kids have changed and evolved throughout the years as they needed to take into account social changes: we are now dealing with subjects who have changed their habits and developed multiple abilities. They do not have fewer abilities than kids of two or three generations ago, they are simply different. Surely their motor skills are not favoured by the limited physical activity during their free and school times, but they have certainly developed other skills like using technological devices. (…) This must let us reflect and change our approach.*

> *Chris: The hours that any of my peers would spend in a training facility were three or four a week, as opposed to the twenty hours that they would spend to do physical activity outside of a training facility. Now we have kids whose only hours of physical activity per week are those that they spend on our football pitch. Therefore, we cannot deliver the same 'copied and pasted' model and then hope that it will work and have the same functionality as before.*

> *Jez: If we consider the youth development phase, the example of kids who enjoy playing with their PlayStation better than playing football emerges*

very often. Probably, this is due to the fact that we did not provide them with the right tools to enjoy football to a higher extent.

Table 1: The coaches' perceptions of the GSA

Codes	Subthemes	Themes
The implications of social dynamics change as a reason to use GS		
Kids' limited physical activity as a result of social change		
Young players struggling with long-term goals due to modern social dynamics	Understanding young players and the social dynamics that shape them	
Kids preferring videogames over football		
Kids being used to virtual realities.		A pedagogical approach for modern times
Past generations of players playing for hours on the street		
Taking the 'street experience' on the football pitch	The necessity to bring back the 'street experience'	
Street football favouring situational and ecological learning		
Implementing GS as players are football's protagonists		
Implementing GS as football is not predictable		
The GSA to train players to adapt to the game's variables		
The GSA to nurture adaptable players		
Players of any age can find solutions that coaches cannot imagine		Players as protagonists within football's unpredictability
With the GSA players are free to do things that coaches cannot imagine		
Players being free to make mistakes during matches		
Nurturing autonomous players		
The coach's role to nurture autonomous players		
Emotions facilitate learning		
Designing activities to stimulate players' competitive emotions		
Players' emotional involvement during sessions		
The roles of emotion and experience in learning		
Emotional and experiential learning through enjoyable playing activities		
Acting on players' emotions to make them perceive contextual risks		The role of players' emotions in learning
The role of emotions within a game-realistic situation		
The importance of emotions		
Intensity as a consequence of motivation		
Emotions experienced during matches as a tool to highlight the necessity to improve		
Emotions to create snapshots of matches in players' memory		
Using matches to understand the emotions behind players' behaviours		
The role played by emotions in the learning environment		
The 'marker ball' to add an emotional component to training sessions		

Carl then referred to his childhood, when youngsters would spend most of their time playing football on the street and how these situational experiences would impact their development:

> *Carl: I often hear people say that the street experience is what is lacking in modern football. Yes, it is. The street experience is lacking because as coaches we are failing to recreate the street experience on the training ground. When I was a kid, I would spend an hour and a half at training out of the seven hours that I would spend playing football on the street every day. I would play from 2:30 to 4:30 pm, then I would do an hour and a half at training and then from 6:00 to 8:00pm, I would be playing football on the street again. So, I was actually training for five hours within the globality of the game.*

> *Carl: The weakest player would go in goal, the strongest would be picked first… However, all of us would play, and in the tight areas, when we would not manage to get the ball, our brains would lead us to find the tricks to get it and retain it. Then, we would all improve technically without doing any unopposed practices. We would develop thanks to the situation, to the old woman that would pass with her trolley and who we would have to avoid, or she would get mad. So, the situation would lead us to improve.*

Moving on to 'players as protagonists within football's unpredictability', the participants explained how the GSA elevates the role of players and allows them to actively and freely experience football's infinite variables. For example, Jez stated: *"I am firmly convinced that players are the protagonists in football and that they can perceive the sense of necessity that the game demands"*. This concept was then further extended by himself and other participants:

> *Jez: Even if I knew what was going to happen in a game, in terms of tactics, certainly that would be affected by a series of variables depending on the players' behaviours that are inevitably unpredictable and that would make it impossible to implement a training methodology a priori.*

> *Neil: From my idea of football, I think that players could always show me something that perhaps I may not see coming, or that they could find a better solution to a given situation than the one that I could find myself. I have also seen this happening with very young players in their first or second year of football.*

> *Noel: I think it is much better to coach through Game Sense, hence making players understand that they are the protagonists, that they make choices and that they are free to make mistakes. This goes for matches too, where my help is very little, I give them my feedback after they make a mistake and not beforehand to keep them from making it, but so that they can use*

that mistake to understand. I do not give them any indications at the start as I make sure that they are free to experiment with anything.

Most participants then discussed the importance of emotions in learning, and how coaching through game-related activities stimulates these elements. A few representative statements by Chris and Jez are presented:

Chris: The idea that we have developed as coaches at our club is that learning certainly occurs through emotions. Therefore, especially with kids from the foundation phase, anything that stimulates their emotions also stimulates an adrenaline response and it has a higher probability to facilitate players' learning.

Jez: Well, I think that athletes learn through experiences and experiences of an emotional kind, by dividing what they learn in two ways: a prevalently motor part and a prevalently experiential and emotional part.

Jez: Therefore, I believe that it is fundamental for motor learning to occur through direct and emotional experiences through a ludic methodology where players have fun. By having fun, players will certainly find greater satisfaction in experimenting with new things and therefore learn through trials and errors.

4.2. The coaches' transition from the traditional approach to the GSA

This dimension of the results was defined as the group of themes around the process of adaptation to the GSA experienced by the coaches and their players. The themes of this results dimension were: 'the coaches' difficulties to adapt to the GSA's complexity' and 'the players' difficulties to adapt to the GSA' (Table 2); with the latter being further divided into two subthemes concerning players' adaptation to the GSA and how coaches facilitated it. The transition from the traditional approach to the GSA led some coaches to experience difficulties related to the complexity of the coaching perspective required in this approach. For example, Jack spoke about his transition: *"Then from that moment onwards I had access to a whole new way of coaching and, in all honesty, the passage from the traditional approach to Game Sense was quite difficult to understand. Then day by day everything became easier"*. A similar experience was described by Alan: *"Not everything was clear at the start. I had to deal with significant complexity in my head. Then I started to integrate some aspects and*

some game situations in my training model". Besides, Jack described the increased difficulty in planning a GS session as opposed to a traditional one:

> *Jack: With the traditional approach it was much easier, I would plan a session in fifteen minutes, while with the GSA I would have to think and then on the pitch I would be required to have a lot of knowledge, to change some things, to intervene in some moments while allowing more freedom in others. However, I would have to be knowledgeable in order to intervene.*

Table 2: The coaches' transition from the traditional approach to the GSA

Codes	Subthemes	Themes
The difficulties of adapting to the GSA's complexity		The coaches' difficulties to adapt to the GSA's complexity
The influence of a mentor to understand the GSA's complexity		
Sudden and complicated transition to the GSA		
Initial struggle with the implementation of the GSA due to the higher knowledge required		
Modern professional players struggling to adapt to changes in football	Players developed through the traditional approach struggling to adapt to the GSA	The players' difficulties to adapt to the GSA
The difficulty of adapting to new training approaches for adult players		
Athletes trained traditionally struggle to adapt to GS		
Adult players' struggle to perceive the GSA's efficacy and how the GS coach's 'placebo effect' to facilitate the transition		
Players used to the traditional approach (especially adults) struggling to adapt to the GSA		
Having to let go of a training approach that players are confident about because it made them win		
The initial struggle experienced by players when subjected to the GSA		
Adult and young players adapting to the GSA		
The players' struggle to adapt to the GSA regards perception		
Players developed through the traditional approach struggling to adapt to the GSA	How coaches can facilitate players' adaptation to the GSA	
'Placebo effect'		
Using the element of fun to facilitate players to adapt and accept the GSA		
Proximal changes and placebo effects to get players on board with the GSA		
Players' perception of their improvement as a tool to adapt to the GSA		

With regards to players' adaptation to the GSA, most participants suggested that the difficulty of the players' process of adaptation is somehow related to their prior

experience with traditional training. Specifically, Alan and Noel spoke about older players struggling to accept the GSA:

> *Alan: Yes, I would say that a player being subjected to the GSA after the traditional approach would experience multiple difficulties. I can tell you with certainty, as my experience showed me that it has always been that way. Even last year I had a coaching experience with a first team. What are the difficulties that they experienced? The older you are and the more certainties you have, and each certainty you have makes you believe that it will lead you towards a positive outcome. So, you already have a model in your mind. The difficulty, therefore, is not training with the GSA but perceiving its efficacy.*

> *Noel: At the foundation phase level, a player's difficulty to adapt to the GSA is minimal as their previous experience with other methodologies is limited. If I think of a first team adult footballer who is used to train with the traditional approach, the difficulty that he could experience when subjected to the GSA could be high because at that level it is more about results and players' full commitment. So, a compromise between the players and the coach could be required.*

Neil and Jack referred to their past experiences to outline the difficulties of young players' adaptation to the GSA. While Neil asserts that these difficulties concern the cognitive load, Jack noticed a problem with the players' perception:

> *Neil: Let's say that especially 14- or 15-years old players when they make a nice play, they spend a couple of seconds basking for the beauty of that play. So, at the start they were like 'Right, I have made a good play, now I will spend two or three seconds to stop, look around, move forwards…'. However, with the GSA we wanted them to be very active at all times and this cognitive effort for them was a bit too much (…). We would watch everyone on the pitch very carefully and make sure they would stay active. Hence, the beginning was quite tough for them. It took us around fifty sessions to make them accept this kind of training methodology.*

> *Jack: I believe that the difficulties that they experienced were, as I mentioned, on the level of relations. They could not relate to other players on the pitch nor perceive the distances between all the teammates and therefore all the mobile references. (…) The fixed references being elements such as the lines and the goals, and the mobile references being the opponents and the teammates. So that is the greatest difficulty of the transition from the traditional approach to the GSA: perceiving the distances between teammates and opponents. There are no distances in the traditional approach because there are no relations…*

Subsequently, some coaches spoke about the tools that a GS coach can use to facilitate the players' bespoken adaptation to this pedagogy. For example, Jez introduced a concept that he later referred to as the 'placebo effect': *"The trick is making them perceive that we are doing what they are used to do whilst we are actually doing something else".* Then, he used a metaphor to outline the necessity to use the 'placebo effect' to maintain players' confidence while seeking their development through the GSA:

> *Jez: The difficulty experienced by a coach who works with players that have never been subjected to this kind of training methodology is making them perceive its efficacy… When you put some water to boil and look inside the pot, the water looks still. If you then increase the heat and look again the water will remain still. When does it boil? It boils at 100°, however when it is at 99° or 0° you can see no difference. Therefore, you must be able to perceive the water warming up. Nevertheless, a player who has never known such a methodology will lose their certainties, then it is down to the coach's skill to use the 'placebo effect', that is to let them do things that make them feel safe in order to achieve some goals the coach's way. If these players are used to train through 11 v 0 pattern practices once a week, perhaps we will not be doing pattern practices every session as they did with their previous coach, but we will do it for five minutes every twenty sessions even if it's against my ideas.*

The importance of players' perception of their development towards their acceptance of the GSA was also highlighted by Neil:

> *Neil: I believe that no player on the planet who is used to a certain methodology, would shut the door to a different methodology if they got positive feedbacks from it. (…) I think that it is only a matter of perception of one's ability and quality increase.*

4.3. GS coaching practice

This results dimension was defined as the group of themes concerning the nature and structure of GS coaching practice and its underpinning concepts. The themes that emerged within this dimension are: 'effectiveness: the inseparability of technical and tactical expressions', 'the fluid and game-based structure of GS sessions', 'the playing activity design as the tool to facilitate learning', 'nurturing perceptual-cognitive skills to develop problem solvers', and 'the difficulty of balancing less talented players' needs with the rest of the team's' (Table 3). With regards to the first theme mentioned,

participants highlighted the inseparability of technical and tactical performance aspects. For example:

> *Chris: Performance aspects cannot be divided, hence we believe that it is not right to talk about technical elements, but it would be more accurate to refer to tactical-technical elements, as tactics consist of finding a solution to a problem, it requires thinking. On this aspect, neuroscience demonstrates that even at the subconscious level there is always a moment when the brain activates. Therefore, a thinking process is always involved, hence we talk about tactical-technical elements.*

This view was extended by Jack and Jez, who introduced the concept of effectiveness to assess tactical-technical performance, and explained how this concept reflects on technical development within their sessions:

> *Jez: If I wanted to teach a player to kick the ball to obtain a high trajectory, I would certainly tell him to take a run-up, place the non-kicking foot next to the ball with his toe aiming towards the target, to prepare the kick, to hit the lower part of the ball to get a high trajectory, to follow through with his kicking foot, and so on. This is how they tell you to coach at courses. The problem is that, as a player, you will never find that exact type of kick in a game situation. You will always use a contaminated adaptation of that perfect technical gesture. There is no perfect way to kick the ball that works in any situation. On the contrary, there are countless ways to kick the ball that seek effectiveness. So, from a pedagogical standpoint, I won't ask a young player to do unopposed practices or coordination drills, as coordination is specific, and every technical gesture has its contextual coordination.*

> *Jack: Look, it's not that I do not care about the technical aspect. However, it is secondary, I mean, it is trained by the game itself. So, I would not be intervening to tell a player that the position of his foot was not right as I believe that mistakes are quite subjective. (…) The game nurtures players' technique. I don't think that technique should be taught as a one-size-fits-all concept, as players are all different and it is up to them to adapt and self-organise to find their own interpretation of the technical gestures.*

Codes	Subthemes	Themes
No technical elements in GS but technical-tactical		
The competence elements		
Coaching effective technique		
Technical development within situational activities		
Football is an open-skills sport where perfect technique is not necessary		
Finding a personal technique to achieve effectiveness		Effectiveness: the inseparability of technical and tactical expressions
The 'correct technique' and efficacy		
The inseparability of technical and tactical aspects		
Technique within the tactical aspect		
Technique is not coached through unopposed practices		
Technique is nurtured by the game through self-organisation		
The concepts of mistake and efficacy		
The nature of learning outcomes in each session		
Coaching width, depth and mobility in the foundation phase to nurture unpredictability		
The tactical dimensions in GS sessions		
Sessions' aims have a tactical dimension		
Working on the tactical weaknesses shown during matches	The underlying tactical nature of GS sessions' learning outcomes	
Working on principles of play in different phases and parts of the pitch		
Sessions never have a technical learning outcome		
The tactical dimension of game-related activities is hidden with young players while is evident with adult players		
The structure of sessions and the interchangeability of practices		
Willing to decrease the use of practices towards the exclusive use of games		
Sessions made of two or three interchangeable 'game structures'		
Starting with a game to recreate a situation to achieve the learning outcome	Realistic play as the core of flexible coaching sessions	The fluid and game-based structure of GS sessions
The session must start with the element of play		
Subsystems are always trained in the situation		
The sessions' structure and replication of matches' snapshots		
Fil Rouge method with the GSA		
Planning weekly GS sessions with tactical periodisation		
70% global situations 30% SSGs		
The game is the cyclical occurrence of subsystems		
Subsystems are always trained in the situation	Working on the subsystems of play	
The players experience the subsystem during matches.		

A system cannot exist without its subsystems		
Favouring the emergence of specific behaviours through practices' layout		
Crafting the design to facilitate the emergence of a behaviour		
Creating contexts where the necessity to adopt the desired behaviour can emerge		
The game activities' constraints should stimulate learning		
How a constraint should be to favour learning		
The alteration of space and time to achieve learning outcomes		
The nature of the learning environment guides young players through their evolution		
Players' learning occurs if the environment stimulates them and motivates them. An ecological approach to facilitate learning	The manipulation of practices' components to favour the emergence of specific behaviours	
Planning to facilitate the emergence of the desired behaviour.		
Coaching through the alteration of the environment		
Using opponents, space, and constraints to recreate the problem identified during the game		
Manipulating practices' constraints and scenarios to create specific situations to work on		the playing activity design as the tool to facilitate learning
Starting with a game to recreate a situation to achieve the learning outcome		
The importance of teammates, opponents, and space in game activities		
Working on principles of play in different phases and parts of the pitch		
Using scenarios in training games		
Repetition without repetition: repeating actions with the same purpose but not in the same way		
Bernstein's repetition without repetition	'Repetition without repetition'	
SSGs allows players to repeat without repeating		
Letting the environment lead players to the solution		
Never giving the solution to a problem in the youth sector		
The use of questions to stimulate players' perception		
Setting a tactical objective and letting players understand how to achieve it	'The solution is not giving them the solution'	
Players of any age can find solutions that coaches cannot imagine		
The coach's role to nurture autonomous players		
Encouraging to perceive the surrounding environment to find a solution to a contextual problem		
School-related questions during practices to stimulate the cognitive sphere		
Cognitive starter activities to 'switch on the brain'		
Encouraging players to solve every problem in autonomy for cognitive development		

The ways to nurture cognitive development	
The transferability of cognitive and perceptual aspects	
Every session includes perceptual and decision-making components.	
Designing constraints to favour perceptual skills development	
Perceptual skills stimulation through verbal feedback and encouragement	
Players' cognitive skills developed by playing the game	
The use of questions to stimulate players' perception	Nurturing perceptual-cognitive skills to develop problem-solvers
Designing constraints to stimulate perceptual abilities	
Perceptual-cognitive skills development as an implicit consequence of GS training	
Games stimulate perceptual-cognitive skills	
Perceptual-cognitive skills are stimulated by game situations	
The specificity of perceptual-cognitive skills	
Perception is developed through the game	
Encouraging players to perceive the surrounding environment to find a solution to a contextual problem	
Constraints to stimulate perceptive skills	
The importance of teaching players 'when' to play in a specific way	
Players' cognitive skills are developed by playing the game	
Willing to train players to be creative, proactive and problem solvers	
Using constraints to stimulate the cognitive aspects during transitions through a negative objective	
Less talented players are rejected by the game itself	
Changing the layout and constraint to match the less capable players' needs	
Working on the level of relations to help less talented players	
Less talented players may get excluded by a context that is too complex for their abilities	
The limitation of the GSA to address every players' learning needs	The difficulty of balancing less talented players' needs with the rest of the team's
Setting individual goals to favour technical development	
The difficulty to handle some players' needs due to the unchanging nature of the game	
The unchanged approach in relation to players' ability	
Game-related activities are not changed to match less talented players' needs	

Moving on to the fluid and game-based structure of GS sessions, the aims of participants' sessions appeared to be tactical regardless of players' age as stated by Jack and Neil:

> *Jack: I start from a principle of play that I want to coach, which could be switching play for example. I then think of the moments of the game… which could change, for example, switching play in a build-up phase, switching play in the middle of the pitch and switching play in the final third. So, throughout the week the areas of the pitch where we work could be different.*

> *Neil: Obviously, with the younger players, the tactical dimension of my session is disguised. There is the game, they must have fun, they must score more than the other team. How do I do it? Well, I may create a 'structure', perhaps I could make a conditioned game… If I was working on exploiting width, I could set a constraint like 'one team can try to score only after they move the ball from the left side to the right side'. However, what matters is that they perceive that they must score, have fun and that there is a competitive element, and with young players I often let them play even though I notice that they are making mistakes. (…) With adults, on the other hand, I can stop the play and intervene more often although I do not like it very much as I believe that the playing continuity of game-based activities is what makes the difference at the end of the day. (…) With adults, if I am coaching a tactical aspect, it cannot be too disguised as they must be aware of what we are trying to do.*

With regards to their sessions' structure, participants seemed to implement predominantly game-based and realistic activities such as conditioned games or phases of play, which are interchangeable throughout sessions and which aim to replicate a game situation previously experienced by their teams:

> *Chris: Once the learning outcomes are decided, we usually plan a warmup, an activity related to the learning outcome but more focused on the motor aspect, and an activity based on a phase of play… (…) We also plan a small-sided game related to a game situation, a conditioned game with a tactical, technical, motor, coordinative, or cognitive constraint and consequently the final game. All these activities are interchangeable: we can start with a game and at the end of the session do an activation game, which is usually a recreational activity… This is the advantage that we have in the foundation phase, we cannot let the players recognise a pattern of activities throughout sessions, so we must interchange them.*

> *Neil: Well, the game must be the core of the session. I always have a goal in my head that is what I want to get out of the session, and that could be anything like exploiting the width or the depth of the pitch… (…) Both teams must be equally stimulated, so the one in possession and the one out of possession, and as a consequence during transitions too. We start with a*

game nearly every session, for example, the session on a Monday after a few days from the match on Saturday we start with a game. At some point, after a maximum of one or two minutes, I try to recreate a situation that the team experienced and that made them struggle during the match. I recreate that situation and then we resume playing… We try to achieve a goal in a specific way, for example, we struggled to attack a team that defended with a very low block on the edge of the box. So, I give some indications to my defenders, change the layout, or put some constraints to recreate that situation and then let them play again.

The use of playing activities with low numbers of players seemed to be a secondary coaching tool as coaches preferred working with game-realistic numbers of players as stated by Jack: *"If I had to choose between working with global or reduced numbers of players, I would say that the best proportion for these activities throughout the week would be 70% global numbers and 30% reduced numbers"*. In contrast, Carl was the only participant that emphasised the use of small-sided games, as these align with his view of the systemic nature of football based on the situations that players perceive during matches:

Carl: A football match is not a system but a continuous sequence of subsystems. The system is what a person perceives off the pitch. When you watch a game, you are looking at the game in its entirety, but the entirety of the match in that specific playing action is a subsystem.

Carl: So, by working on the subsystems that we then put together during matches, we still maintain the globality as during training the performance aspects are not trained separately, we are simply reducing the system. Instead of 11 v 11 in a 110x64m, which if I am correct is the length of the pitch, we are working in a 40x25m or 35x20m in a 3 v 3, 4 v 4 or 6 v 6 depending on the situation. The reason we do it this way is that when they are in a game, they are not really 11 v 11, as we are actually 5 v 5, 4 v 4, 4 v 3, 5 v 6…

A further theme that strongly emerged from the data concerns the role played by the playing activity design to facilitate players' learning. Specifically, all participants rely on the manipulation of the playing activity design towards the emergence of desired behaviours and/or the development of certain skills. The playing environment is indeed manipulated by the interviewees through the creation of scenarios or the alteration of constraints, spaces, and numbers:

Chris: Depending on the numbers and spaces that I planned, I look to stimulate specific behaviours over others. If I am doing a playing activity with a tactical constraint like playing the ball with one touch, then I am stimulating

them to work on their positioning, losing the marker, making many passes and fewer ball receptions.

Jez: A practice that runs smoothly is not facilitating learning. So, if I wanted to help players, I would tell them 'look if you want to achieve this goal the way I am asking you to then you need to do this'… But that's not what I do. For example, I only tell them that I want them to find a way to score. Then it's the rules and constraints that I put that should lead them to find the right solutions towards the achievement of the goal that I set.

Neil: I usually know what are the problems or situations that I want the lads to try based on the previous sessions and games. So, I let them start playing and then during the game I would adjust something. I could change a rule, change the dimension of the grid, create emotional situations like one team being two goals up, hence the other team must go win the ball back and make it level. So, these situations allow me to stimulate a problem that I want to work on.

Within the playing activities discussed thus far, some participants manifested the aim to enable players to experience more playing situations as possible in order to learn. Chris indeed stated: *"We try to stimulate the repetition of playing actions because actions have a finality whereas technical gestures sometimes don't".* Noel also touched on this aspect by referring to Bernstein's (1967) concept of 'repetition without repetition':

Noel: With regards to when I move from one activity to the next, as I previously mentioned, in my opinion, it's not about being able to solve a specific situation but… Bernstein's idea of 'repetition without repetition', meaning that what I care about is that they repeat the process and they can find various solutions, they don't have to repeat a specific solution. So, I can move from one activity to a similar one without depending on the first activity to be completed optimally.

A theme that greatly resonated across the data was the participants' willingness to use the environment and provide players with limited indications rather than laying out a solution to a game situation. In a handful of words that were used to name this subtheme, Jez outlined this concept: *"The solution is not giving them the solution. The environment is the key".* Neil also expressed this notion:

Neil: I set an objective like 'the ball must get there' and then it is down to players to find the solutions to achieve that, and if they can't, they will develop the skills required while attempting to achieve the tactical objective that we are working on.

Another theme that arose from the participants' interviews concerns the development of perceptual-cognitive skills. Some coaches claimed to use constraints to stimulate these skills within game-related activities:

> *Jez: On Thursdays' warmup I do a game of four reds against four yellows, two of which have a cross on their bibs whilst the other two have circles. One circle of one colour, and the other circle of a different colour; one cross of one colour, and the other cross of a different colour. Same thing for the other team. So, during the game I call 'circles', and the game becomes the two yellow and the two red players with circles against the four players with crosses on their bibs. Or I can call 'reds' so the game becomes yellows against reds.*

On the other hand, Chris nurtures players' perceptual-cognitive skills through less game-related activities in the foundation phase. Specifically, he uses school-based questions to stimulate their cognitive skills:

> *Chris: I could do a game with some shooting involved where I split the players into little groups and only allow them to play when I call a character related to the history of ancient Rome. I do this with kids at the elementary school level and who are studying that historical period. Otherwise, I can put a similar constraint with mathematics: players are allowed to play when I call an odd number as a result of an addition, multiplication or division.*

When considering his coaching experience, Noel stated that he used practices similar to the one described by Chris, though he stopped using them as he questioned the development of perception away from the specificity of the game:

> *Noel: I used to craft practices that would stimulate perceptual skills like scanning. For example, I would do a practice where players would run around with the ball and had to call the colour behind their teammates' back before making a pass, so they had to turn around and scan. (…) However, I stopped doing these practices as some reading that I did made me realise that those practices did not stimulate a game-specific perception as they were perceiving a colour or something else that is not part of the reality of the game.*

The last theme that emerged within this dimension is the limitation of the GSA, identified by some, at addressing the learning needs of teams' less talented players. Within game-realistic activities, the complexity that players experience is the same for every player, and this aspect may not facilitate some players' needs. However, some coaches argued that the exclusion of less talented players is inevitable, as mentioned by Jez: *"If one is clearly not talented it is the game itself that excludes them"*. Besides,

Alan stated that the complexity of game-based activities could be lowered to match these players' needs, however, this would imply that the rest of the team would not be challenged sufficiently:

> *Alan: We could even create a context that is a bit easier to solve for those few players that are less talented, so that they could feel more comfortable within that context and so that they can have fun and increase their confidence and efficacy. However, it would take a gradual process to take them to a level of complexity where we aim to get, and if we had to undergo this learning process for those few players, we would lose much learning time for the rest of the team that is already at that level and who needs to experience other situations. (…) The alternative is to personalise training and coach players individually but that would mean abandoning the environment. (…) Either way, there is a problem. This is indeed a problem.*

4.4. The coaches' interpretations of their roles of facilitators

This dimension of the results encompasses the codes related to the participants' interpretations of the roles of facilitators that GS coaches embody. The themes that arose within this dimension were: 'the pedagogical importance of mistakes', 'highlighting the necessity to learn', and 'coaches' questioning activities to jointly explore the complexity of the game' (Table 4). The key function of mistakes towards players' learning was thoroughly discussed by participants and it determined the construction of three subthemes: 'mistakes as fundamental elements for players' learning', 'knowing players for effective interventions', and 'the 'sandwich intervention technique' to address mistakes'. As mentioned by Jez, *"Mistakes play a decisive role in any learning process as they lead to improvement"*. Chris and Neil further deepened this subject by highlighting the necessity to perceive mistakes as positive elements:

> *Chris: We must be happy when they make mistakes, we must make sure they recognise that, hence the need to use questions. If a kid starts recognising mistakes, they will develop a level of knowledge about themself and about the game, which are both very important. In contrast, if we make them perceive mistakes as something negative and not to be repeated, we will intimidate them.*
>
> *Neil: Mistakes are not something bad. They are a necessity and a training tool, and they are proof that players are training and learning. If I run a practice or a game where there is no mistake, it means that the players are in their comfort zone, hence they are not being stimulated.*

Participants also talked in-depth about the importance of knowing when to address a mistake and when not to. With this regard, Chris mentioned observation to perceive the right moments to intervene, while Neil and Noel spoke about preserving the cyclicality of the game to favour players' self-organisation and experiential learning:

Chris: We must observe, be smart and know when to intervene and when not to, and this is extremely important. It is far more important to understand when not to intervene than when to do it. (…) There are moments during sessions when I have to intervene and make corrections and some moments, about 90% of the time, when I must not intervene'.

Jack: I believe that if I intervene during the activity and break the game's cyclicality, by the time they re-elaborate all they were thinking it would take too long. So, I let them play and after a while, I intervene. (…) If I see a player making a bad choice I won't intervene straight away, but I will see whether, in the following action, he self-organises, perceives the surroundings and then makes an efficient choice.

Noel: Mistakes are fundamental in the learning process as, through mistakes, players can understand when their behaviour is not good and then change it. If I intervene before or during the playing action, the risk is that they will have a specific behaviour because I told them off for making a mistake rather than because they learned it themselves. (…) During a playing activity, I just let them play for about three minutes straight. I cannot intervene every time because they are making mistakes, on the contrary, I want to preserve the cyclicality of the game: attack, transition, defence and so on. Then afterwards, during a break, I would make an intervention through feedbacks, not in the sense of technical feedbacks like 'Place your foot like this, do this and do that', but feedbacks around the game situation. (…) I believe that in every moment, whatever they do is unique, hence I cannot correct a thing that won't happen again in the same way. Besides, the perspective is different too: I am standing in one spot, they are in the game, so I have a specific viewpoint of things that, from a different perspective would probably change.

Participants also spoke about coaches' necessity to calibrate their interventions in relation to the player to whom they are addressed, hence the importance of knowing each player. Two representative examples of this subtheme are provided by Chris and Neil:

Chris: We should personalise interventions, because if we have a deep knowledge of the group then we can quickly understand why a specific player made a specific mistake. (…) However, if you address the mistake straight after it happens, depending on that kid's personality, the intervention might backfire as it could lead to a loss of his attention.

Neil: Interpersonal empathy is key. If I did not have empathy and I did not know how a player would react to one of my questions and how an intervention might affect that player and his development, then I would struggle. Earlier we spoke about creativity. Creativity is a skill that is very important especially in the foundation and youth development phases, and if I make a wrong intervention, at the wrong time and by using words that could hurt the player or make him struggle, I would certainly be switching off their creativity. Then I would be losing some potential which is really difficult to recover later on. If they perceive that I am demoralising them, or that I am not with them, or that I make mistakes, I would be very limiting.

With regards to how mistakes should be addressed, some coaches mentioned the 'sandwich intervention technique'. Chris briefly explained what this technique consists of:

Chris: The theory of the sandwich is always effective: positive feedback, negative feedback, and then positive feedback again. You start by making an appraisal: 'You made a good choice, but you could have kicked the ball differently, but you did well as the ball got to your teammate'. A critique between two positive feedbacks.

Another significant function of GS coaches that constitutes a theme is 'highlighting the necessity to learn'. The concept of necessity seemed to be central in some participants' interpretations of facilitating athletes' learning. For instance, Jez defined this element as decisive towards effective coaching: *"It's the method of necessity that enables you to get results: you have to design playing contexts from which the necessity to achieve the learning outcome that you set can emerge"*. Noel explained the importance of grounding his coaching on the players' necessities:

Noel: I usually start from the observation of a playing situation that took place during previous games or sessions. Why do I do it this way? Because I do not believe that learning consists of me passing on my knowledge directly to them, but I think that it's a process that starts from their necessities, then goes through me and then back to them. I try to observe what they need by watching what they do, and when they show me a necessity, I try to work on that.

Table 4: The coaches' interpretations of their roles of facilitators

Codes	Subthemes	Themes
Performance v learning		
The importance of observation and knowing when not to address a mistake		
When and how to address a mistake		
The importance of not seeing mistakes as something negative		
Not perceiving mistakes as something negative		
The importance of mistakes in the learning process		
Rewinding actions to address mistakes while avoiding judging		
The steps to address mistakes		
Knowing when not to critique		
The use of videos during training to aid players to spot their mistakes	Mistakes as fundamental elements for players' learning	
Encouraging young players to dribble to favour their development and not limit their growth		
No need to address a technical mistake		The pedagogical importance of mistakes
Mistakes are positive as they show that the players are out of their comfort zone		
No need to address technical mistakes		
The importance of empathy for effective questioning activities		
The importance of mistakes and why they should not always be addressed		
The concepts of mistake and efficacy		
Not interrupting playing actions to address technical mistakes		
Addressing the whole group rather than individuals during interventions		
Knowing players to understand mistakes		
Getting to know players' personalities through games		
The importance of knowing each player for effective interventions	Knowing players for effective interventions	
The importance of empathy for effective questioning activities		
The 'sandwich intervention'	The 'sandwich intervention technique' to address mistakes	
The 'sandwich feedbacks' with young players		
The coach's role to identify players' necessities. Not a 'coach to athlete' learning		
GS coaches should create contexts where the necessity to adopt the desired behaviour can emerge		
The necessity for players to be engaged within their learning and the coach's responsibility to create that necessity		Highlighting the necessity to learn
Players' necessities determine the efficiency and quality of sessions		
Observation oriented towards players' necessities and not the coach's		
Involving players in Q&A interventions		
Q&A + Guided Discovery styles		
Q&A style where players and coaches jointly look for solutions		
Q&A, guided discovery and democratic approaches		

Coaches don't have the solution	
Players of any age can find solutions that coaches cannot imagine	
70% Q&A and 30% guided discovery	Coaches' questioning activities to jointly explore the complexity of the game
Q&A to address tactical mistakes	
The pattern behind the questioning activity	
Q&A and guided discovery	
The questioning activity allows players to come up with their solutions	
Guided Discovery	
The use of questions to stimulate players' perception	
Interventions are aimed to push players to find different solutions	
Tactical democracy	
Democratic coaching to favour learning and understanding	
Guided discovery	
Democratic coaching	

Similarly to what Noel and Jez said, Alan's experience made him realise that enabling players to identify what they need to learn makes a difference in their development.

> *Alan: If contextual problems are what drive the players to find solutions, then, as a coach, I must try to replicate those problems in training. (…) Why do I say that contextual problems lead to learning? Because thanks to previous studies that I did and the experience that I gained throughout the years, I realised that unless players perceive that something is needed to score… If one does not perceive the necessity to do something to achieve a goal, they simply won't do it and will look for a different path. (…) In the problem determined by the opposition, the situation, the context and space, players perceive that necessity. What does that necessity come from? It comes from the fact that they are footballers who are trying to win a game. So, if that necessity drives my players' behaviours to be proactive in doing something within a match, then that is the same necessity that I must look to recreate during training sessions.*

With regards to the coaches' intervention styles conducted during their coaching practice, all participants identified questioning activities such as Q&A and Guided Discovery styles as the coaching tools they use the most. Chris indeed explained the reasons behind his use of questioning activities:

> *Chris: We must talk to our lads. (…) we must take a minute and involve them, ask them questions and encourage them to answer even if their answer is not right… we need to make them talk and express what they think. Making interventions whose finality is only to increase our ego really makes little sense. When I intervene without asking a single question, I am making an intervention for myself. When I don't allow them to make choices,*

> *I am coaching myself, not them. So, our rule is to always involve the lads, always ask them questions, always try to get an answer from them, because at the end of the day they are the ones who make decisions on the pitch.*

However, while the nature of all coaches' questioning activities is aimed at guiding players to break down the game's complexity, the purpose of such inquiries could differ. Carl's example shows how inquiry-based coaching styles can be used to lead players to a solution deemed as correct in specific situations, whilst Jack's quotation displays an approach seeking to enable players to find as many solutions as possible to a given problem:

> *Carl: If there was a mistake on a principle of play, I would stop the game and ask the player who made the mistake: 'Why did I stop the practice?' and then look to lead him to the answer. If I notice that he is unsure, I try to help him out and give him some tips. Then I ask the rest of the team: 'Why did I stop the play? What is the reason?'.*

> *Jack: I usually aim to ask questions to allow them to suggest different answers than the one that I thought but that are still correct. In some cases, if they solve a situation by using the solution that they suggested and I see that they find consistent success with it, I say: 'Alright, from now on you cannot use this solution anymore, find a different one'. Perhaps they find another one, and I forbid to use that one too, so they have to adapt and find another idea that maybe I didn't even think about.*

Regardless of the purpose of their questioning activity, the standpoint adopted by the coaches is very democratic as they mostly look to find solutions *with* the players as mentioned by Alan: *"Once we highlight the problem then it becomes a dialogue where I am on the same level as them and we look for a solution together"*, and Jez:

> *Jez: They don't ask me what to do, they ask me: 'What if I try doing this?' because they already know that they must try to do things differently rather than asking me to give them the solution. This is the concept: I don't have the solution, and I have been telling them since day one'.*

5. Discussion

This research project sought to deepen four unexplored areas around the GSA that were highlighted by the review of the literature: (i) GS coaches' perceptions of this pedagogy, (ii) GS coaches' transition from the traditional approach to the GSA, (iii) the GS coaches' session planning, designing, and delivering, and (iv) their interpretations of their facilitative functions. The research aims embodied the previously presented four overarching dimensions of the results. The key findings of this study are analysed and compared with the existing literature. The results of this study were not affected in any way by researcher-participant relationships as the sample was mostly composed of coaches who had never interacted with the researcher prior to the interviews.

5.1. The role of emotions in the learning process

When outlining their perception of this pedagogy, coaches asserted that the GSA allows them to act on players' emotions, which they identified as elements of utmost importance for one's learning process. This result aligns with the literature, which evidenced the potential of GCAs, including the GSA, at fostering learning in the affective sphere (Harvey & Jarrett, 2014, Kinnerk *et al.,* 2018). Specifically, the participants highlighted the importance of emotions in combination with experience to increase the likelihood of learning to occur. Emotional experiences can indeed be long remembered by individuals (Tyng *et al.,* 2017). According to Hascher (2010), emotions are determinable affective elements, such as enjoyment or frustration, which befall as a result of an experience deemed as significant by an individual, and they contribute to increasing their self-awareness. Therefore, the enjoyment experienced by engaging in game-related activities (Harvey, 2009; Harvey & Jarrett, 2014; Ryan & Deci, 2017), and the social interactions among players, can act as intrinsic motivational elements and enhance players' collective and individual learning (Manty, Jarvenoja, and Tormanen, 2020). Besides, research around learning within educational settings suggests that positive emotions can have cognitive effects leading to self-regulated learning as a result of the interaction between personal and situational elements (Pekrun, 2006; Hascher, 2010; Marchand & Gutierrez, 2012).

5.2. The transition from the traditional approach to the GSA

With regards to coaches' transition from the traditional approach to the GSA, the results show that the interviewees struggled to handle the complexity of the coaching standpoint required in GS coaching practice. This finding is consistent with the literature, which suggests that coaches who adopt the GSA require a shift in their perspective of the coaching functions and a deeper knowledge of the game's dynamics for effective coaching (Light, 2004; Harvey & Jarrett, 2014; Reid & Harvey, 2014; SueSee, Pill, and Edwards, 2016). When considering coaches' early implementation of this approach, the literature evidences the reluctance to empower players and involve them in decision-making as a common obstacle that coaches experience (Light & Robert, 2010; Cushion, 2013; Harvey & Jarrett, 2014; Kinnerk *et al.,* 2018). However, this aspect never emerged from the results.

Surprisingly, when enquired about the difficulties that they handled during their transition from the traditional approach to the GSA, most participants discussed the necessity to guide players towards the adaptation and acceptance of this pedagogy. Specifically, some participants outlined that players, especially the more experienced footballers, can resist the GSA. In the participants' experiences, it was evident that some players were sceptical about the efficacy of this approach. This finding could be key for future research as athletes' process of adaptation to the GSA is seldom considered within the literature. The few studies that mention this aspect relate these difficulties to the deep-rooted assumption, among players and coaches, that traditional coaching represents the standard for good coaching (Potrac, Jones, and Cushion, 2007; Kinnerk *et al.,* 2018). According to Potrac, Jones, and Cushion (2007), players who are nurtured through the traditional approach rely excessively on the coach's instructions and, therefore, instinctively resist different approaches where their involvement in decision-making is higher. Although this kind of players' resistance to the GSA emerged from the data, the interviewees outlined players' perceived efficacy of the GSA and their in-game perception as the two main difficulties experienced by players. While no academic research investigates players' insight of the GSA's efficacy, the occurrence of difficulties related to athletes' in-game perception is consistent with the literature. Light and Robert (2010) indeed outlined how perceptual skills cannot be imparted but only fostered through the interaction with a game-realistic environment, which the traditional approach hardly stimulates. Consequently,

footballers nurtured through the use of decontextualised practices may struggle to fully perceive the game's dynamics. Nonetheless, further research is necessary to investigate the process of adaptation from the traditional approach to the GSA from the athletes' perspective.

5.3. The concept of effectiveness

A widespread assumption around the GSA and other GCAs is that the development of technical skills is often disregarded (Cushion, 2013). However, the findings of this study indicate that such an assumption may be the result of the reductionist standpoint adopted by traditional coaches. In contrast with traditional coaching, GS coaches, including this study's interviewees, believe in the inseparability of technical and tactical performance components, because technical gestures are the consequence of tactical thoughts (den Duyn, 1997; Chow & Atencio, 2014; D'Arrigo, 2015). This finding is very much in line with the literature as multiple studies put forward that in the GSA the concept of technique is replaced by the notion of skill as the performance aspect constituted by a motor technical element and a cognitive tactical element (den Duyn, 1997; Pill, 2012; Pill, 2015). The participants also suggested that nurturing technical skills by guiding players towards the execution of an idealised technical gesture is incompatible with the reality of the game, which 'contaminates the execution of a perfect technical gesture'. The literature suggests that GS coaching is underpinned by dynamic systems theory (Pill, 2014; Zuccolo, Spittle, and Pill, 2014). The interactions between the players and the game environment establish a complex dynamic system whereby players' behaviours are influenced by the unique environmental stimuli occurring during matches (Pill, 2014; Zuccolo, Spittle, and Pill, 2014). Consequently, Pill (2014) put forward that the nature of invasion games requires players to discover functional movements with respect to the environmental constraints and the players' tactical intention in any given situation. The functionality aspect mentioned by Pill was brought up by the participants in the form of effectiveness. The participants suggested that players should seek the execution of a technical gesture that is effective, and therefore functional, in relation to the desired tactical outcome. Therefore, this finding could extend the literature as it outlines how players' development through the GSA cannot be assessed through a reductionist evaluation of their performance components, but it must be conducted through the epistemological perspective

adopted by GS coaches, which gravitates around the concept of effectiveness of players' behaviours. Besides, this finding contributes to understanding one of the fundamental principles that underpin GS coaching practice.

5.4. Shaping situational contexts to facilitate learning

With regards to coaching practice, all participants emphasised the manipulation of the playing environment as their foremost coaching tool to achieve a session's learning outcome or stimulate the emergence of the desired behaviour. Specifically, the participants alter space, time, and numerical overloads of their playing activities' design, use constraints and create scenarios to generate certain playing situations whereby learning can occur. These elements used by participants to shape the learning environment are very consistent with Light, Harvey, and Mouchet's study (2014). The manipulation of the learning environment and its design are indeed elements of utmost importance in the GSA according to research (Chow & Atencio, 2014; Light, Harvey, and Mouchet, 2014; SueSee, Pill, and Edwards, 2016).

Another characteristic element of the participants' coaching practice was the tendency to let the environment guide players to one or more solutions to a given playing situation rather than directly showing players the solution. In detail, the participants merely inform players of the objective to be achieved within a playing activity so that the players can freely find solutions to achieve the objective itself while adapting to the environmental and task constraints. This aspect may therefore extend the abovementioned concept of effectiveness from a wider perspective. This finding aligns with the complex learning theory underpinning all GCAs, as the influence of environmental constraints and the centrality of players within their learning process are evident as well as the intention to construct knowledge through experience (Chow & Atencio, 2014; Light, Harvey, and Mouchet, 2014). With regards to accumulating experience, the findings show that some coaches are more concerned with allowing players to repeat the process of finding a solution to a given problem rather than repeating the execution of one solution. When discussing this subject, a participant made a specific mention of Bernstein's concept of repetition without repetition (1967). Bernstein indeed advocated athletes' repetition of the process of pursuit of a functional solution to a given task goal by exploring the variability of the playing activity. The use of the GSA along with Bernstein's 'repetition without repletion' (1967) aligns with Pill's

study (2014). Nonetheless, the literature highlights this concept as one of the underpinning notions of the Constraint-Led Approach (Renshaw *et al.,* 2016; Renshaw & Chow, 2019). In light of the results concerning coaches' manipulation of the environment considered thus far, the similarities between the GSA and the Constraint-Led Approach coaching practices appear evident. These findings may inform future research to investigate the distinctions between these two pedagogical approaches and how these are delivered.

5.5. Nurturing perceptual-cognitive skills to develop problem-solvers

Some participants claimed to stimulate players' perceptual-cognitive skills within game-related activities, while others create practices with a lower level of game realism. The former ones seemed to aim to develop perceptual-cognitive skills by maintaining the game realism, while the latter interviewees stimulate these skills through decontextualised perceptual stimuli. These contrasting methods to nurture athletes' perceptual-cognitive development raise doubts on whether a decontextualised development of perception could then enable athletes to experience perceptual-cognitive benefits in a game-specific environment. The review of the literature around perceptual-cognitive skills carried out by Williams *et al.* (2011) suggests that the acquisition of these skills occurs most likely as a result of the prolonged engagement in game-specific training activities. A further study by Williams *et al.* (2012) outlined that players who showed higher perceptual-cognitive skills resulted being those who had accumulated more experience in deliberate play activities such as street football, an aspect that was also brought up by one of the interviewees. Perceptual-cognitive skills are also trained through the implementation of video-based simulation grounded on the assumption that this kind of training can lead to enhancements in football performance (Gorman & Farrow, 2009). Therefore, the effectiveness of some participant's approaches that use game-related activities to develop these skills is supported by the literature, whereas the efficiency of perceptual training through decontextualised stimuli for football-specific performance requires further investigation. Besides, it could be argued that this kind of perceptual-cognitive training is inconsistent with one of the theoretical pillars upon which non-linear pedagogies stand, such as Gibson's concept of perception-action coupling (1979).

According to this concept, perception should be considered as the result of the interaction between the player and the environment (Gibson, 1979). Therefore, training perceptual-cognitive skills through decontextualised stimuli may not favour the player-environment interaction required for the implementation of game-specific perception.

5.6. The pedagogical importance of mistakes

One of the interpretations of their facilitative functions discussed by the participants consists of the utilisation of questioning to either stimulate players to find creative solutions to a given situational problem or to guide players towards one of the coach's pre-planned solutions. The results showed no significant emergence of different coaching styles, and their application of questioning activities aligns with the literature (Light, 2004; Light, 2013; Chow & Atencio, 2014; Light, Harvey, and Mouchet, 2014; SueSee, Pill, and Edwards, 2016; Pill, 2016; Vinson *et al.,* 2016). However, a key result that emerged within this domain was the pedagogical importance of mistakes for players' learning, which seemed to inform the participants' questioning activities. The interviewees discussed their responsibility to convey a positive concept of mistake, as players should perceive a mistake as a sign of their ongoing learning rather than something negative to avoid. Moreover, the participants greatly emphasised the importance of recognising when not to correct mistakes rather than when to. Some participants indeed claimed to observe whether players can autonomously correct their mistakes to decide whether to intervene or not. The findings in this regard are consistent with Light and Harvey' study (2017), which outlined how excessive corrections of players' mistakes may result in athletes not being able to develop autonomy and self-confidence. Light and Harvey (2017) argue that the supportive learning environment that characterises the GSA enables mistakes to be perceived as essential for learning. Besides, as mentioned by a participant, correcting a mistake might lead a player to fear failures and therefore hinder their capability to learn from their mistakes (Kelly, 2017; Light & Harvey, 2017). Therefore, observation and the ability to understand when to address a mistake are two fundamental skills for coaches (Smith & Cushion, 2006; Light & Harvey, 2017).

5.7. The necessity to learn

Some interviewees discussed the importance of guiding players to perceive the necessity to do or learn something for effective coaching. They claimed to shape the learning environment so that the players could perceive the necessity to adopt a specific behaviour. As recognised by a participant, such a way of facilitating athletes' learning contrasts the notion of linear learning according to which knowledge is transferred from the coach to the athletes in favour of complex learning theory (Light & Robert, 2010). Moreover, this finding represents a key facilitative function that informs the coaches' manipulation of the learning environment and, in turn, their coaching practice. As explained by an interviewee, this function requires the coach to recognise the athletes' necessities and consequently create an environment that meets these necessities so that new behaviours can be learned. Therefore, the ability to recognise and address athletes' needs is a paramount skill for this process, as outlined by research around coaching effectiveness (Cotè & Gilbert, 2009; Jowett, 2017). Orth, van der Kamp, and Button's study on the Constraint-Led Approach (2019) identified a similar facilitating process, which requires coaches to adapt the learning environment's components based on the players' perception of the environmental affordances. Affordances are environmental properties that invite players to adopt the desired behaviour and they are an underpinning concept of the Constraint-Led Approach (Chow & Atencio, 2014). The calibration of these elements must be subordinated to an appropriate level of complexity in relation to the athletes' needs and abilities; for this reason, GS coaches must be able to recognise when the learning environment is not facilitating the emergence of the desired behaviour and thus adjust the environmental and task constraints (Chow & Atencio, 2014). This finding denotes yet again another overlapping concept between the GSA and the Constraint-Led Approach that may aid future research.

6. Conclusions

The phenomenological analysis of seven case studies carried out within this research led to an extensive set of findings. Among the four overarching domains in which the results were presented some key concepts emerged. Firstly, this research identified the proficiency of the GSA to act on athletes' emotions as one of the reasons underpinning practitioners' perception of this pedagogical approach within the football development context. Specifically, the game-based nature of this approach and the social and environmental interactions occurring within playing activities enable the occurrence of meaningful learning as supported by research (Pekrun, 2006; Harvey, 2009; Harvey & Jarrett, 2014; Ryan & Deci, 2017; Manty, Jarvenoja, and Tormanen, 2020). When investigating the participants' transition to the GSA, the results appeared in line with the existing literature as the participants' foremost encountered difficulty concerned their acquaintance with the GSA's complexity. Furthermore, some participants discussed how the transition from the traditional approach to the GSA similarly affects athletes who can experience struggling and discomfort that the coach must address. With regards to the GS coaching practice, this research's findings shed light on a more appropriate way to conceive tactical-technical performance components within the framework of this pedagogy through the conceptual lenses of athletes' effectiveness. Shaping the design of playing activities through the alteration of environmental and task constraints emerged as a key element of the participants' GS coaching practice in line with Light, Harvey, and Mouchet's paper (2014). This study highlighted some similarities in the alteration of the learning environment between the GSA and the Constraint-Led Approach that could be further analysed by future research. The development of perceptual-cognitive skills is central in the GSA as it enables the development of 'thinking players' and their game sense growth (Pill, 2016). The results show that coaches cultivate these skills through game-based or decontextualised activities. Consequently, queries on whether these skills can be developed outside of the specificity of the football performance arise from the results. When expressing their interpretations of their roles of facilitators, the participants emphasised the importance of the ability to recognise when not address athletes' mistakes to evade the risk of hindering their learning process, as suggested by Kelly (2017). A further key facilitative function that emerged in this study is the coaches'

responsibility to prompt athletes to perceive the necessity to learn something or adopt a new behaviour for effective learning.

The utilisation of a non-empirical research method to analyse the participants' experiences with the GSA keeps this study from theory building. Self-serving biases may have affected the participants' description of their coaching practice and behaviours. The data referring to the interviewees' previous experiences are influenced by their subjective perspective of the phenomena analysed. However, these limitations are the consequence of the pondered decision to adopt a phenomenological stance that allowed this study to explore the differences and similarities across participants' personal interpretations of this pedagogy given the absence of a defined theoretical model (Light, Harvey and Mouchet, 2014). Therefore, this study contributes the existing literature towards an increased understanding of different areas of the GSA and provides fertile ground for future empirical studies oriented to theory building. A longitudinal observational analysis of a GS football coaches sample is recommended to obtain empirical data that could aid research to a well-defined explanation of what GS coaching practice looks like. Besides, this study highlighted different similarities between the GSA and the Constraint-Led Approach that require further investigation to determine the elements distinguishing these two pedagogies in the matter of coaching practice.

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