

# The factors influencing the practices of elite camogie managers

 **Philip Connors**  . *healthCORE. Department of Health and Sport Sciences. Southeast Technological University. Carlow, Ireland.*  
 **Des Earls.** *healthCORE. Department of Health and Sport Sciences. Southeast Technological University. Carlow, Ireland.*  
**Declan Browne.** *healthCORE. Department of Health and Sport Sciences. Southeast Technological University. Carlow, Ireland.*  
**Paula Rankin.** *healthCORE. Department of Health and Sport Sciences. Southeast Technological University. Carlow, Ireland.*

## ABSTRACT

Management in sport involves multiple responsibilities, including player management, stakeholder communication, and integrating technical, tactical, and physical preparation. While coaching practices, beliefs and barriers have been reported across sports, no research has examined the factors influencing elite camogie managers' practices. This investigation aimed to redress that gap. Six senior camogie managers participated in semi-structured interviews focused on session planning, player monitoring, and other emergent topics. A six-step thematic analysis was used to analyse the data. Three key themes emerged: Barriers impacting player preparation, coaching beliefs, and managers' sport science knowledge. Managers reported funding and resource availability as significant constraints on player development and monitoring. Managers described using a traditional coaching approach, with fitness and skills developed in isolation before game-based activities, with their sport science knowledge impacting their practices. Ensuring best practice in camogie should be a priority, with greater funding and sport science integration required at the elite level.

**Keywords:** Performance analysis, Coaching, Gaelic games, Female athlete, Game-based approach, Sport science.

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**Corresponding author.** *healthCORE. Department of Health and Sport Sciences. Southeast Technological University. Carlow, Ireland.*

E-mail: [philip.connors@setu.ie](mailto:philip.connors@setu.ie)

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## INTRODUCTION

A manager's role in player preparation for field sport competition is multi-faceted, having to balance management of coaching sessions, player management, and dialogue with stakeholders simultaneously (Horton, 2014). Ex-players tend to assume previous playing experience equips them appropriately for the manager's role, with a lack of management courses available to prepare them for the role (Kelly, 2008). Furthermore, elite level coaches are often former elite athletes who are fast-tracked into the roles and exempted from entry-level qualifications (Blackett et al., 2017, Rynne, 2014). Camogie is an amateur sport, with managers not remunerated, and usually have full-time occupations and responsibilities outside their role. As a result, managers in camogie have multiple duties they must balance in preparing their team, alongside their occupation, with little education on what is required of them.

Camogie research was limited until recently, with research now available on camogie players' physical characteristics and locomotor demands during match-play and training (Connors et al., 2022a; Connors et al., 2022b; Connors et al., 2022c; Duggan et al., 2022). Despite this, no published research exists on the factors influencing camogie coaching practices.

The literature recommends coaches adopt a games-based approach (GBA) (Kinnerk et al., 2018), to ensure players are exposed to skills which are game-relevant (Ford et al., 2010), factors traditional methods such as isolated skills practice do not expose players to (Kinnerk et al., 2018). However, a Gaelic football study reported coaches to implement a traditional drill-to-game approach, using isolated skill work as their session starting point before progressing into game-like scenarios (Kinnerk et al., 2019). Coaches within the same investigation prioritised isolated fitness work in the pre-season to physically prepare players, despite the physical benefits of utilising small-sided games (SSG). Malone et al. (2021) reported improvements in a cohort of hurlers' physical capabilities after exposure to a periodised SSG intervention. Hammami et al. (2018) concluded SSG to be an effective multicomponent strategy to improve physical fitness and skills concomitantly.

Coaches across sports including Gaelic football, Australian football, and soccer (Ford et al., 2010; Kinnerk et al., 2019; Tribolet et al., 2021) reported using traditional methods to prepare their players. The amount of time required to plan a session (Evans, 2006), alongside coaches' traditional beliefs that skills must be learned prior to utilising games (Ford et al., 2010; Harvey et al., 2013) may be two reasons coaches prefer this approach. No research to date has reported on the factors influencing coaching in camogie, however.

Coaches have cited limited funds to impact player preparation across male and female sports, restricting access to resources and facilities (Loturco et al., 2023; McCormack et al., 2020). Previous research documented camogie S&C coaches to use monitoring tools with their players, however, just 31% of 13 S&C coaches with female Gaelic teams (Ladies Gaelic football and camogie) reported using GPS to monitor players [19]. It may be possible this lack of GPS technology is due to limited funds, also previously reported in amateur male rugby (Zabaloy et al., 2022). Limited access to facilities and resources may also impact sport science staff availability (Brink et al., 2018), which consequently could impact managers and coaches approaches.

It is evident a manager's role in sport is complex, with many factors to consider. The literature has shown game-based coaching to be an appropriate method of physically preparing players for competition. However, coaches across sports use a traditional coaching approach preparing their teams. Research has not investigated the factors underpinning current camogie coaching approaches, nor has it sought to understand

the current strengths and challenges associated with the sport from a manager's perspective. Therefore, this investigation aimed to redress this discrepancy between camogie coaching practices and recommendations in the literature and investigate the factors influencing the practices of inter-county camogie managers.

## METHODS

This investigation was conducted using a qualitative approach, to gauge the factors influencing practices of inter-county camogie managers. A constructivist grounded theory (CGT) approach was used, where new theory is generated from the emerging data, rather than utilising an existing framework (Charmaz, 2006). No theories currently exist on coaching approaches specific to camogie, therefore, a CGT was preferred over a classic grounded theory approach. The CGT approach suggests meaning and experiences are constructed collaboratively by the researcher and the participants, to identify their preconceptions (Lindqvist & Forsberg, 2023), allowing the interaction between the researcher and participant to generate new theories and ideas.

### **Participants**

Ethical approval was sought and granted by the University's Research Ethics Committee. Six ( $n = 6$ ) senior inter-county camogie managers volunteered to participate in a semi-structured interview. Semi-structured interviews were chosen as the preferred data collection method as it allowed the researcher to explore the participants' thoughts and feelings on particular topics in an open-ended manner (DeJonckheere & Vaughn, 2019).

This sample represented half the available inter-county camogie managers ( $n = 12$ ). Managers were recruited via emails sent to each respective county board, as well as through direct requests to individual managers.

Table 1. below provides details of the managers who participated. Managers have been assigned pseudonyms to protect identities.

Table 1. Details of interview participants.

<b>Coach (pseudonym)</b>	<b>Formal sport science education</b>
Kieran	Yes
Mark	No
Frank	No
Tom	No
David	Yes
Nicky	Yes

The interview structure was guided by results of an unpublished study, where thirty-three coaches, from developmental (u14) to adult level, were surveyed on areas including coach education, session planning, and planning and monitoring practices. Coaches reported using a linear approach to training, with drills used prior to progressing into game-based activities. Coaches also used a greater percentage of training form activities such as isolated running and drills during the pre-season, with more playing form activities in the peak season. Furthermore, limited monitoring practices were also evident. Consequently, the results were used to direct the design and focus of the interview questions.

The interview was broken into separate stages, in line with Rubin and Rubin's (2012) interview structuring approach. The first section centred around coaches' background, qualifications, and their introduction to coaching Gaelic Games and camogie. The next stages sought to discuss factors influencing camogie player

preparation, their use of load monitoring tools, session design, and their coaching approach. All interviews were conducted over Microsoft Teams, with participants consenting to record the interview, allowing retrospective transcription. Interviews were 22 to 44 minutes in duration. Notes were taken after each interview by the lead author and were used as a reference point in the analysis (Braun & Clarke, 2022; Gill et al., 2008). Data saturation was reached, with similar concepts, themes and discussions reoccurring throughout each interview, and no new themes or concepts emerging.

### **Analysis**

The interviews were transcribed verbatim. The transcription process was entirely manual, with only words transcribed. The data was analysed using a 6-step thematic analysis process, as outlined by Braun and Clarke (2006). This approach was chosen given it provides a clear framework to conduct thematic analysis of the data. The first phase of the analysis involved data familiarisation, with transcripts read a number of times, along with relistening to the interview recordings on repeat occasions. This allowed initial observations to be established within the data. Codes and themes were then established, with elements of the data being assigned to different categories based on obvious similarities and differences. The coding approach used in establishing the themes was inductive and was done entirely manually. Numerous conversations took place between the lead author and the research team around some of the data's initial themes and features, which raised some questions on the lead author's interpretations of the data. The supervisory team were also provided with the raw data, to ensure the findings and themes generated were accurate and reflected the entire research team's interpretation of the data. This process ensured continuous analysis of the data, and challenged the lead author, resulting in thorough analysis of the data. The themes were named, with a report then written to reflect the key themes outlined by camogie managers during the interviews.

## **RESULTS AND DISCUSSION**

This investigation aimed to understand the factors influencing the current planning and monitoring practices of elite inter-county camogie managers. Three themes were established through the analysis process: 1. Barriers impacting the preparation of players, 2. Beliefs and opinions towards player preparation, and 3. Managers' sport science knowledge. The results and further discussion on each theme are outlined below.

The quotes outlined have been lightly edited in some instances for clarity and brevity purposes, with edits denoted with "...". Spelling and grammatical errors have also been corrected to improve the comprehensibility of quotations. In some instances, words have been added to clarify the interpretation of the quote; these are denoted in "[ ]". On occasions where data overlapped between themes, a subjective decision was made to place it in the most appropriate theme.

### ***Barriers impacting the preparation of players***

Elite camogie managers reported barriers including funding and facility availability in preparing their teams. Most managers focused on the funding divide between camogie and hurling, citing the increased funds afforded to hurling teams. Frank summed up the managers' feelings stating:

*"you know we wouldn't be at the same budget as the hurling or whatever else"*

Gender disparities are reported in sports throughout the literature. Few changes, if any, have been reported in media coverage, marketing, and promotion of female athletes and women's sports over the last number of years (Fink, 2015). Therefore, it would seem all female athletes are not being afforded the opportunities to reach full participation, or their true potential (Capranica et al., 2013).

Similar financial discrepancies are obvious in Gaelic games. Limerick GAA reported spending €2.3 million preparing their teams for the 2022 season (Roche, 2022). In comparison, Tom stated he would have less than 5% of this to prepare his team. It must be noted despite this comparison of two Gaelic sports, both are governed by separate bodies, therefore, it may not be a fair comparison or reflection of funding. David stated he had no funding issues however, comparing his team's position with the men by saying:

*"It's on par with the men... there's no issue with that [cost or facilities]. They've been one of the best looked after counties to be fair."*

Therefore, resourcing discrepancies may also be present between elite camogie teams. Despite David experiencing no funding issues, a lack of funding is an issue reported by other camogie managers. Lack of funding is particularly limiting camogie's access to technology, such as GPS. Two of the six coaches (Kieran and David) reported having permanent GPS technology access. Previously, O'Rahilly et al. (2022) reported just 31% of 13 S&C coaches working with female Gaelic games teams (camogie and Ladies Gaelic football) to monitor their players using GPS technology. Anecdotally, all elite senior hurling teams appear to have GPS technology access, with players visibly wearing GPS units during competitive games. Kieran reflected on women's place in sport regarding funding, concluding:

*"I think women's sport is way behind from a resources point of view, and being able to afford all this stuff [GPS]"*

The lack of GPS use in camogie may be partly due to coaches choosing to spend their funds elsewhere, with Mark stating:

*"it's getting better [access to funding], but you just wouldn't have the same finances, and you're kind of picking and choosing what you can go for, like whether you go for GPS or whether you go for the performance analysis package. Whatever you look for you kind of have to balance, you have to pick and choose what's more suitable to your team"*

It appears due to limited funding, teams rely on fundraising, and people providing services for free to provide teams with such resources. Mark and Nicky elaborated on this, respectively commenting:

*"things like GPS, unless we had somebody to come in for free that's not going to happen"*  
*"you're trying to do fundraising and you're actually just asking for favours for people to do stuff for free"*

Coaches reporting a lack of funding is not just isolated to camogie. Academy rugby league coaches cited both funding and facilities as barriers they face (McCormack et al., 2020). S&C coaches also reported the use of technology and physical testing to be impacted by the economic state of amateur male rugby clubs in Argentina (Zabaloy et al., 2022), with 20% of coaches reporting inadequate equipment and facilities (Zabaloy et al., 2022). Loturco et al. (2023) noted Brazilian Olympic sprint and jump S&C coaches to encounter similar issues.

Therefore, although camogie managers focus on a gender divide in Gaelic sports, this is not the case in other sports and countries, with coaches reporting similar barriers in male sports. However, in a Gaelic games context, it may seem more prevalent in camogie than hurling, with the majority of managers in this investigation citing funding to impact their preparation. Coaches in the UK from 47 sports placed the

responsibility for the lack of funding on the governing body (North et al., 2020). It is unclear if such sentiments are echoed by the managers within this investigation.

Facilities and funding also seem to impact a managers' approach to session design, due in part to last-minute changes, and facilities available. Mark noted how the lack of floodlights impacted his ability to play full training matches in pre-season saying:

*"if we had better facilities, I would probably play a bit more 15 v 15 [full size pitch and team numbers] in pre-season"*

Mark's preference, given access to greater facilities and a floodlit pitch, is to utilise more training matches to prepare his players. However, Nicky declared the situation to be hindered by more than just inadequate floodlights stating:

*"you're asking around our training schedule for different times of the year. Some of that is purely based around the constraints of where we can get to train. So, on a Friday evening in early season, we can get an astroturf and one straight line maybe 150 metres long of a running track. So, I would say that's a massive limiting factor in I suppose.... You can work around it, but it definitely does limit what you want to do"*

These teams are among the elite camogie teams in the country, but despite this, still encounter such issues, as outlined by Nicky. This is comparable to one of the key issues reported by UK coaches, with 35% of coaches raising issues with facilities (North et al., 2020). Elite soccer coaches reported facility availability and quality, issues with facilities due to unfavourable weather, alongside a lack of equipment and storage as constraints also (Weston, 2018). Camogie managers reported similar issues in this investigation. Mark, as mentioned, alluded to the inability to play 15 v 15, as preferred. SSG are a valid method of increasing the physical and physiological capacity of players through a periodised plan (Malone et al., 2021), with SSG and training matches comparing favourably to the camogie match-play running demands (Connors et al., 2022a). Funding and facility availability may be one consideration influencing the approach to player preparation, resulting in managers not utilising these methods. This will be further discussed in theme two.

Therefore, currently, funding and facility availability present two barriers camogie managers report is preventing camogie players' preparation at the elite level. This is most obvious in their funding for technology, such as GPS, and appropriate facilities. Despite recent advancements in such areas, managers feel further improvements are required. Camogie authorities should look to improve on this in the future.

### **Beliefs and opinions towards player preparation**

The second theme apparent was camogie managers' beliefs and opinions towards player preparation. The drill-to-game approach and a GBA are two methods frequently reported in the literature (Harvey et al., 2013; Kinnerk et al., 2018; Light, 2004). Camogie managers seem to favour using games in their training, with Frank and Tom stating:

*"you'd like to get as much game-based in as you can"*  
*"game-based is excellent"*

However, the majority of managers use game-based activities after developing the initial skills of the game, with Frank going on to state:



*“at the same time, if the skills aren’t up to scratch, you need to eh, you need to do an element of that as well”*

Tom commented similarly by saying:

*“but there’s no point doing game-based if you haven’t got the sharpness to fitness, to hurling [technical skills], to anything”*

This belief and opinion of camogie managers reflects the ‘traditional approach,’ whereby the belief is skills must first be mastered before progressing into game-play scenarios (Blomqvist et al., 2001; Evans, 2006). Soccer and Gaelic football coaches report using similar approaches (O’Connor et al., 2018). However, this approach contrasts with recommendations in the literature (Kinnerk et al., 2018). A GBA recommends using drills if required (Mitchell et al., 2006), but not as the sessions ‘starting point’ (Turner, 2005). In this investigation, managers reported using isolated skill work as the starting point of their sessions.

Kinnerk et al. (2018) reported an acknowledgment within the literature of a separation between technique and tactical knowledge using a traditional approach, rather than a GBA (Holt et al., 2006; Light & Harvey, 2015). Nicky stated similar when he said:

*“What I found in camogie, is that when you try to go into too many game-based scenarios, there wasn’t the same... and not necessarily skills, but the same awareness of what’s required at the level that they’re playing at to execute the skills well”*

This comment, if viewed as an accurate reflection of camogie players’ current level, reiterates the requirement for a GBA to be used in camogie. Despite reporting camogie players’ game-sense knowledge to be insufficient currently, with the indication it reflects the players’ ability, it is possible the players are a product of the traditional coaching environment they have been frequently exposed to. This may result in the disconnect between practice and game play, leaving players unable to respond to game scenarios (Light & Harvey, 2015; Pill, 2014).

This is a rare insight into the players’ tactical knowledge within this investigation. Nicky went on to focus on the players’ skill levels:

*“I find with camogie in particular, the skillset, in terms of the fundamental skills, is a lower level than what you’d have at a comparative level in hurling for example. So, I think your approach can differ based off of the players that you’re dealing with”*

Most other managers focused solely on the players’ skill levels, with no thought for the tactical elements, which may partially explain their preference to focus on isolated skill work at the start of sessions. David and Frank noted camogie players’ skill levels to not be at the level required, with Mark referencing similar:

*“their skill levels aren’t exactly where they should be”*

*“especially maybe with the time, and players coming into even senior set-ups, they mightn’t have as much hours behind them on the wall or on their touch so sometimes in camogie you need to spend that little bit longer on that [isolated skills practice]”*

*“I think with camogie, I think girls need to be hurling [developing technical skills] all the time, more so than the hurlers”*

The above comments should be interpreted whilst acknowledging the prevalence of male managers in camogie, and their possible perceptions of camogie athletes (Walsh, 2023). Coaches past experiences, including playing experiences, may influence their coaching (Gilbert et al., 2006, Rodgers et al., 2007). Managers focused on players' skill level, resulting in isolated skill activities being used, with isolated fitness work complimenting technical and tactical work. However, game-based activities have been shown to develop physical and physiological parameters of performance in hurling (Malone et al., 2017; Malone et al., 2021), as well as in a cohort of soccer players (Nayiroğlu et al., 2022). Furthermore, game-based activities may simultaneously improve players' technical skills (Clemente et al., 2021; Kinnerk et al., 2018).

Discussing the potential of utilising SSG to physically prepare players, a mixed response was received from camogie managers. Kieran acknowledged the benefits of SSG and training matches, with Mark reporting similar.

*"like you're really able to work on fitness and stuff like that through those games"*

*"you do conditioned games, you know to get the fitness in the conditioned games"*

David also utilised games-based methods in his sessions where possible:

*"everything will be done as much as possible with the ball, in game scenarios, and modifying the games to incorporate a good blast of fitness. If the S&C coach thinks that we need a heavier blast, based on the scores that's coming back, we can do it. But it'll be all game-based"*

Some camogie managers acknowledged the benefits of SSG for conditioning. However, there seems to be little thought of using a periodised plan. A periodised SSG plan has been recommended as a way of increasing players' physical performance capabilities (Hammami et al., 2018; Malone et al., 2021). Despite this, some managers do not view it as a necessary component of player preparation. Kieran, with reference to structuring a SSG periodised plan, described himself as;

*"a complete disaster from that point of view"*

Meanwhile, Nicky reported no such periodised plan in his planning, stating:

*"we're not doing I suppose an idealised progression-based scenario on small-sided game duration, or density of players, or anything like that"*

Camogie managers predominantly focused on skill work prior to more game-specific work, citing the players' skill level as their primary reason for this. This results in managers dichotomising training time on isolated skills and fitness work, something a GBA could provide simultaneously. Both other themes in this investigation may contribute into this strongly held belief. Tom's comments are reflective of a traditional coaching approach, describing predominantly using training form activities in the pre-season, before using more game-related activities in peak season:

*"early months of the year, you're trying to focus on conditioning, more so. 60% conditioning and fitness, 40% skills and game-based. Obviously, as the season progresses then that percentage will go that way [signals downward] ... should be going down to 20, 25% fitness based. Maybe 80% of the stuff with the ball you know"*



This approach has been reported in other sports, including Gaelic football (Kinnerk et al., 2019), and soccer (Ford et al., 2010). Australian football reported a similar replacing of fundamentals and fitness with match simulations as the season progressed (Tribolet et al., 2021). Kieran's comments may provide insight on why managers choose to use this approach:

*"if you're aiming at a certain target, you'd nearly have to drill it because you can't really control what people are doing within the game. I suppose what you have to take into consideration is you have more control over a drill than you do in a game, right"*

This viewpoint is not supported within the literature. Previous training demands research in camogie has showed SSG and training matches to equal or surpass the match-play demands (Connors et al., 2022a). Games-based interventions across sports can also improve the players' physical fitness capacity (Hammami et al., 2018; Malone et al., 2021).

Tom stated his S&C coach plays no role in planning SSG. Instead, they are allotted a time period during the session for physical preparation work. When asked about integrating SSG and conditioning, Tom responded:

*"with us, as I said already, the S&C is separate, and any game-based stuff we're doing is with the hurling coaches"*

It seems counter-intuitive to not utilise a GBA for physical preparation, given the method simultaneously develops players decision-making and tactical knowledge (Hammami et al., 2018). It may be possible a managers belief and historical view of what coaches should be doing contributes to this (Cushion, 2013). Nicky observed camogie players to be unsure what skills to use in a game scenario, as reported above. Camogie managers, therefore, have declared a greater requirement for methods to develop players' tactical awareness. A GBA is one such method that may allow this occur, whilst developing other performance attributes simultaneously. Education pathways may reiterate the benefits and uses of SSG to camogie managers and coaches. This is further discussed in theme three.

As discussed in theme one, Mark reported funding to play a role in facility availability for camogie teams. Although it may impact player preparation in certain instances, some managers interviewed may not use a GBA irrespective of facilities, due to their coaching beliefs. An increase in funding, allowing increased GPS technology availability, may allow sport science staff the opportunity to present live data to camogie managers on how game-based activities running demands can adequately prepare players for competition, as previously reported in camogie (Connors et al., 2022a). Perhaps this approach, alongside coach education, may help camogie managers appreciate the benefits of a GBA.

### ***Managers' sport science knowledge***

The third key theme identified was the managers' sport science knowledge. Three managers interviewed have completed formal sport science courses, with the other three having no formal sport science education. Education level impacted the managers' level of understanding on some facets of team preparation, particularly load monitoring using GPS, sport science integration, and session planning. Coaches previously acknowledged their lack of knowledge in long-term athletic development (Till et al., 2022), therefore this is not unexpected.

These differences were obvious in how managers spoke about the discussed topics. Managers with a formal sport science education (Kieran, Nicky, and David) spoke about key GPS metrics they use, or would use should GPS technology be available, summarised by David's comments:

*"we know how much they are actually covering, what level of sprints, accelerations, decelerations, and stuff like that that they are actually covering in a game"*

David stated he used these metrics during games and training to ensure players are adequately prepared for the match-play demands, similar to previous published camogie research (Connors et al., 2022a).

*"we would've obviously compared match data with training data to make sure we were exposing them to the same demands we were meeting in matches, so we weren't training one way and playing in a completely different way"*

Nicky, given limited access to GPS technology, reported similar, with Kieran reporting likewise.

*"What I primarily use it [GPS] for is creating a library of games we know we do regularly"*  
*"we used to time stamp our training session, so we were able to build up a bank of games and drills that we knew were going to get us to a certain type of intensity"*

In comparison, managers without formal sport science education spoke about monitoring players over a total session, citing total distance as their primary metric, with uncertainty in some cases on GPS use.

*"the S&C coach would be more looking at that. I suppose we'd be looking at that [GPS]. I suppose we'd be looking at averages and who's above and below average and things like that. We'd be working together just to make sure we're covering a certain amount of ground"*

A point of note may be where camogie managers direct their funds. Two teams, managed by Kieran and David, both have permanent access to GPS technology. Both managers also have formal sport science education. Although not discussed or investigated further, it may question if a managers' sport science knowledge, and the perceived benefits of monitoring methods such as GPS, influences how camogie managers spend their budget.

These points may query if greater inclusion of sport science content is required in camogie coach education. Coaches previously cited formal coach education to have little relevance to the job of coaching, with formal courses having a lower impact than informal methods (Nelson et al., 2006). Coach upskilling is at the discretion of the coach in Gaelic games, with no requirement to continue coach education beyond formal introductory courses. David reflected as much when saying:

*"I think in the GAA, you did it, right, you have your qualifications, good luck and thanks"*

The same manager further lamented the lack of CPD hours available to Gaelic games coaches, though it is unclear if this is directed towards courses offered by the governing body, or by external companies.

*"I find that there isn't a lot of ehm, suppose like what CPD hours that you can do. Do you know like if you're working in business and stuff you'd... there'd be courses you have to do to keep up to date"*

Based on the above, formal coach education for camogie coaches and managers is limited, with progression depending on the manager or coaches' own intuition to further their learning. Sporting organisations fast-tracking former elite athletes to coaching roles due to their playing ability may result in a disconnect between the skills advocated in coach education courses, and the coaches' expectations (Blackett et al., 2017). Stodter et al. [2019] cited traditional, deeply embedded coaching practices to be difficult to change through short formal courses, surmising a requirement for follow-up educational sessions. Therefore, the suggestion may be perhaps a review of coach education in Gaelic games is required, to incorporate follow-up educational sessions and a greater integration of sport science content.

Given the points above, a greater sport science integration may be required in camogie. Consequently, managers without a sports science background may need to rely on their S&C coach to integrate these practices. However, S&C coaches are not always present during training, with Mark stating:

*"we like to look after it [S&C] ourselves [when the girls are on the pitch]"*

Meanwhile, as discussed in theme 2, Frank reported the S&C coach to have no input into the SSG planning and prescription, going on to further state:

*"we haven't had a conversation with our S&C guy around that [programming of SSG]"*

The above comments may be due to two reasons. As discussed in theme 1, funding may dictate an S&C coach's presence at sessions. Alternatively, traditional coaching beliefs and camogie managers' opinions, discussed in theme 2, may contribute to the lack of integration between coaches and sport science methods. Within this investigation, it appears camogie managers may not appreciate their role in players' physical and physiological preparation, with sport science practitioners' knowledge transfer requiring improvement in this scenario (Coutts, 2016). Nicky highlighted situations where coaches may use resources such as GPS technology just to show they are using it, rather than it having an impact:

*"sometimes people will use things like GPS because it's a gadget where they think they're having an impact, and it mightn't be used at all in terms of its application"*

The lack of game knowledge of sport scientists is reported as a barrier to using sport science (Brink et al., 2018), a point which David also made:

*"you need good S&C coaches that can understand the game, and they're hard to find"*

Managers performance level and previous experiences with sport scientists may impact how they receive sport science information, with the lack of an academic background impacting their sport science understanding (Brink et al., 2018). It is the S&C or sport science practitioners' responsibility to ensure managers requirements are met (Fullagar et al., 2019), and sport science data is communicated effectively (Horsnby et al., 2022).

Furthermore, a lack of funding for sport science resources, which may include GPS, has been reported (Reade et al., 2008), with this also a key theme identified in this investigation. Brink et al. (2018) reported 75% of participants indicated a need to expand their sport science budget, mostly to include a sport scientist within the coaching staff. Limited GPS availability is reported in this investigation also, similar to previous reports (O'Rahilly et al., 2022).

Therefore, greater funding may allow an increase in sport science availability. Increased access to GPS technology may allow sport science practitioners show the value of sport science methods, and the benefits of utilising a GBA to develop camogie players' physical, technical, and tactical abilities. Sport science staff currently in situ may need to assume greater responsibility, to ensure managers understand the benefits of applying such methods and collaborating with skills coaches to plan sessions. The inclusion of at least one appropriately qualified sport science practitioner as part of the management team may be one practical suggestion for camogie boards, to aid and encourage a collaborative approach between sport science staff and skills coaches in team preparation.

A greater incorporation of sport science practice may be required in camogie, given sport science practitioners absence at sessions and in session design and planning. This may be done through the continuous upskilling of coaches, in both a formal and informal manner to ensure best practice occurs. Furthermore, coach education programmes may also consider ensuring coaches appreciate the use of sport science in camogie. Formal sport science education pathways may also play a role to ensure sport science practitioners can coherently provide coaches and managers information with relevant information.

### **Limitations**

Despite the use of the most appropriate scientific methods, and attempts to ensure scientific rigour, limitations may still exist. All managers in this investigation were male, with their playing experience in hurling. It is possible this may influence their opinions on the factors influencing camogie player preparation. The absence of a female manager, both of whom were unavailable at the time of data collection, may be a limitation of the investigation and may have provided alternative results. Future research may seek to interview female camogie managers and coaches to provide a female perspective on the findings of this investigation.

This research was conducted with a single interview with each manager, with no observation of sessions to provide context on the answers given by each manager. Observing coaching sessions may provide greater insight into camogie players preparation, and the factors influencing this preparation.

Finally, camogie managers were identified as the most appropriate point of contact given the study's aim. However, conducting research with other members including coaches, strength and conditioning practitioners, and the players may provide alternative results. Future research may elaborate on this research and further investigate the factors currently influencing elite camogie player preparation.

### **CONCLUSION**

This investigation reported the factors influencing elite camogie managers' current planning and monitoring practices preparing players for competition. Managers reported funding and access to facilities as barriers which currently impact teams preparation, with limited funding also restricting their access to resources, such as GPS technology. A traditional coaching approach is evident within this cohort of managers, with game-based activities used after the development of skills. Furthermore, managers currently dichotomise technical, tactical, and physical elements of preparation, despite the ability of game-based activities to develop all attributes simultaneously. This may be due to the managers' sport science knowledge, which impacted the managers' understanding, alongside their traditional beliefs towards coaching. A knowledge of the demands of competition, a greater integration of sport science methods, and greater funding to provide access to resources such as GPS is required in camogie at present, to ensure recommended methods are used to continue the development of the sport.

## AUTHOR CONTRIBUTIONS

The study was conceptualised and the methodology designed by PC, DE, DB and PR. PC undertook data collection, with PC, DE, DB and PR analysing the data. PC, DE, DB and PR completed the writing, editing and final manuscript draft preparation. All authors have read and agreed to the published version of the manuscript.

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No funding agencies were reported by the authors.

## DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

## DATA AVAILABILITY

The data from this investigation is available from the corresponding author upon reasonable request.

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