

Research article

## Mobile Athlete Self-Report Measures and the Complexities of Implementation

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### Abstract

Recent practice in athlete monitoring has seen the development and implementation of customized, digital Athlete Self-Report Measures or Mobile Athlete Self-Report Measures (M-ASRM) across various sport settings, including amateur sports such as Gaelic Games. Successful implementation of M-ASRM requires significant consideration of the use context and limitations therein, an investment of time and expertise by staff and buy-in from key stakeholders, yet there is limited evidence of these considerations being applied in practice. This study aimed to investigate stakeholder perceptions regarding the implementation processes and understanding of a pre-existing M-ASRM in elite Gaelic Games. Semi-structured interviews were conducted with the use of a topic guide to explore the rationale, introduction and use of M-ASRM. Participants were 21 M-ASRM users in elite Gaelic Games (players  $n = 10$ , coaches and support staff  $n = 11$ ), from 15 teams. Thematic analysis was conducted collaboratively by two authors, adopting an inductive approach and coding the transcripts using NVivo 12 software. Four higher-order themes were formed from the data: (1) clarity of purpose; (2) implementation strategies; (3) players perceptions of use and (4) perceived facilitators of M-ASRM use. The results of this study demonstrate a significant underestimation of the practical requirements for successful implementation of an M-ASRM by users in elite Gaelic Games. Recommendations are made for implementation and best practice use, including shared decision-making, evidence-based education strategies, structured feedback channels and improved planning with regards to feasibility and responsibility.

**Key words:** Athlete monitoring, well-being, training load response, facilitators.

### Introduction

Athlete monitoring has grown to reflect standard practice in athletic preparation and there remain few facets of performance that cannot or are not being measured in the quest for competitive advantage. Training load monitoring, performance measurement and training load response are some of a suite of factors employed to maximize the positive effects and minimize the negative effects of training, informing workload and recovery (Gabbett et al., 2017). One such suite are athlete self-report measures (ASRM): records of perceived physical, psychological and/or social well-being (Saw et al., 2016). ASRM can offer simplicity, affordability and practical advantages over other traditional methods of athlete monitoring such as physiological measurement (Main and Grove, 2009; Buchheit et al., 2013; Halson, 2014; Saw et al., 2015b), and validated

measures have been shown to accurately reflect training-induced changes in athlete well-being (Saw et al., 2016). Through their accessibility and potential to monitor both sport and non-sport stressors, ASRM are a well-placed and attractive athlete monitoring option for sport at many levels, as they can often be implemented with minimal financial investment and staffing expertise (Saw et al., 2015a). Typically, ASRM in practice are digitized, short, customized or commercially available measures designed for daily completion, which are favored by coaches for their ease of use, sport specificity and automation capacity (Taylor et al., 2012; Gastin et al., 2013; Saw et al., 2015c). These digital ASRM, whether custom or commercial will be referred to here as mobile athlete self-report measures, or M-ASRM.

Gaelic Games are the national sports of Ireland, typically known by the dynamic field sports of football, hurling and camogie. Gaelic Games remain amateur sports but at the elite level have been known to demand a professional attitude to the game in their training and preparation (Cromwell et al., 2000; Kelly et al., 2018). As such, Gaelic Games are well-placed to benefit from such M-ASRM, where an amateur sport with a professional approach exists. However, the individual adoption of M-ASRM can often come without due consideration of their use processes and with a proposed rationale for implementation based on personal experience rather than scientific support.

Because the optimal utilization of athlete monitoring systems requires a significant investment of time, financial and human resources to obtain, analyze and leverage the data effectively (Saw et al., 2015c), the early adoption of M-ASRM without due consideration of these processes will have a profound effect on its success and value. Therefore, the drivers of an M-ASRM implementation strategy in practice should be the anticipated purpose and consideration of practical limitations of the use-context with respect to personal, socio-contextual and system factors (Ekegren et al., 2014; Saw et al., 2015c). As such, published recommendations for successful ASRM implementation include pre-planning with respect to feasibility, analysis and interpretation, in addition to the engagement of stakeholders and development of a supportive culture (Saw et al., 2017a).

Social-environmental considerations for ASRM implementation in applied practice include stakeholder buy-in and reinforcement (Saw et al., 2015c) and team sport athletes in particular have been shown to place a greater perceived importance on ASRM output and the buy-in of their coaches in their use of an ASRM (Saw et al., 2015c). Interestingly, previous research has identified a lack of

understanding from athletes regarding the purpose and benefits of their training monitoring system (Neupert *et al.*, 2018). Suggestions for the scope of athlete education have been described (Saw *et al.*, 2015c), however, athlete uncertainty regarding how to access and interpret their results has been evident even where a preceding education session has taken place (Neupert *et al.*, 2018). Effective education can address the expectations, motivation and self-efficacy of users and should be followed by ongoing support to improve skills, aid problem solving and maintain motivation (Durlak and DuPre, 2008). However, research investigating the use of these methods in M-ASRM implementation in applied sport is sparse.

Successful implementation of an M-ASRM presents a significant and complex challenge for elite sport and to date, there is limited research concerning the implementation processes employed for M-ASRM use, particularly in elite Gaelic Games. There is a requirement for context-specific knowledge on the implementation complexities and perceptions of M-ASRM use to inform the development of effective implementation guidelines that are based on the needs and preferences of users. Therefore, the aim of this study was to investigate stakeholder perceptions of the implementation and understanding of a pre-existing M-ASRM in the elite Gaelic Games setting.

## Methods

### Participants

Twenty-one M-ASRM users in elite Gaelic Games were recruited for this study (players  $n=10$ , coaches and support staff (CSS)  $n=11$ ), see Table 1. Participants were recruited via opportunity and snowball sampling, where invitations to partake were sent via email. Participants were required to have used an M-ASRM for a minimum of one month and be aged 18 or over. There were no exclusion criteria. The available population consisted of players and CSS from twelve male and three female elite Gaelic Games teams. Ethical approval for this study was granted by

University College Dublin Human Research Ethics Committee and participants were advised of their right to withdraw from the study at any stage.

### Study design

The qualitative approach of semi-structured interviewing was employed to gain insight into the perceptions of participants using an M-ASRM in their individual contexts, as it can allow disclosure of important and often hidden aspects of human and organizational behavior (Qu and Dumay, 2011). The lead author (CD) conducted all interviews and was previously familiar to five of the participants. Interviews were conducted at locations convenient for the participant (e.g. in a meeting room at their training ground) or via telephone if required. Interviews were navigated with the use of a topic guide utilizing open-ended questions (Table 2). The topic guide allowed participants to be interviewed relatively systematically, while enabling new areas of conversation to be explored (Qu and Dumay, 2011). The lead researcher was an 'insider' who had previous clinical experience in the use of M-ASRM in Gaelic Games. This 'insider' status may have aided the development of an initial rapport with participants and equally will have influenced the interpretation of conversation through both shared and conflicting experience (Cowan and Taylor, 2016). Acknowledging the position of the lead author to bring 'insider' perspectives to the study (Carless and Douglas, 2013) and concurrently recognizing the influence of this potential bias, the topic guide was collaboratively formulated by two authors. Open-ended guide questions were developed to cover the broad areas of introduction, rationale and use of M-ASRM, to gain insight into the perceptions of and relationships between these factors. For the purposes of this investigation, it was less important to consider specific features of the M-ASRM used, focusing instead on how it was implemented and understood. Interviews were reviewed by authors CD and PS after completion, to reflect on the topic guide and knowledge co-construction (Roulston, 2010).

**Table 1. Participant characteristics.**

	Cohort Descriptors	Players (n=10)	CSS* (n=11)	Total
<b>Demographics</b>	Male/Female	8/2	10/1	18/3
	Mean Age	27 + 3.6	37 + 11	n/a
	Team Experience (seasons) ± SD	3 - 14 (mean 8 ± 3)	1 - 13 (mean 4.5 ± 3.5)	n/a
	System Experience (seasons) ± SD	1 - 3 (mean 1.9 ± 0.7)	1 - 4 (mean 1.9 ± 1.3)	n/a
<b>Sport (Gaelic Games)</b>	Football	6	7	13
	Hurling	2	2	4
	Ladies Football	1	1	2
	Camogie	1	1	2
<b>Team League Division</b>	One	5	6	11
	Two	1	2	3
	Three	2	1	3
	Four	2	2	4
<b>Coach and Support Staff Roles</b>	Strength & Conditioning Coach	n/a	4	4
	Sports Scientist	n/a	2	2
	Physiotherapist	n/a	2	2
	Team Manager (Head Coach)	n/a	2	2
	Nutritionist	n/a	1	1

\*CSS = Coaches and Support Staff

**Table 2. Interview topic guide.**

	Coach & Support Staff	Player
<b>System</b>	Can you tell me about the athlete monitoring systems you've used?	Does your team monitor you? Can you tell me about the systems you've used?
<b>Introduction</b>	Can you tell me who introduced the system to the players/other management and how it was done?	Can you tell me how the system was introduced to your team and who introduced it?
<b>Rationale</b>	What was the rationale for introducing the system?	Can you tell about why the system was introduced to your team? What is it used for?
<b>Use</b>	Can you tell me about how you use the data?	Can you tell me about who analyses the data? Can you tell me about what they do with it?

**Data analysis**

Interviews were transcribed verbatim and analyzed using NVivo 12 software. Transcripts were coded as follows: players were coded with the letter P and a number identifier, while CSS were coded with the letter C and a number identifier, e.g. P001 & C001. Thematic analysis of the transcripts adopted an inductive approach to allow patterns to emerge from the data (Walsh et al., 2015), with the topic guide providing an initial structure for the codebook (Saldana, 2015). Thematic analysis involved careful reading and re-reading of the data to identify patterns, assign codes, and formulate themes and sub-themes (Braun and Clarke, 2006; Fereday and Muir-Cochrane, 2017). A sample of the transcripts were analyzed by ‘insider’ CD and ‘outsider’ PS (Carless and Douglas, 2013) and key concepts were discussed and challenged in the development of the higher and lower order themes in the codebook (DeCuir-Gunby et al., 2011; Fereday and Muir-Cochrane, 2017). Data were then coded independently by CD and PS, and subsequently discussed in the development of interpretations (Thomas, 2006). To ensure design and analytical rigor through refl-

exivity, the interviewing procedure was reviewed, and data were micro-analyzed by CD and PS throughout the data collection process (Roulston, 2010). Critical dialogue between all authors on data analysis and construction of interpretations continued throughout this process and during drafting of the manuscript (Cowan and Taylor, 2016; Smith and McGannon, 2018).

**Results**

Four higher-order themes were formed from the data: (1) clarity of purpose; (2) implementation strategies; (3) players perceptions of ASRM use and (4) perceived facilitators. The results are presented in Table 3.

**Clarity of purpose**

*CSS rationale:* The rationale for implementing the M-ASRM among CSS varied from workload monitoring, injury prevention and informing athlete readiness, to adding a marginal gain to athletic preparation. In some cases, the direction to implement the system had come from a higher

**Table 3. Results.**

Higher-Order Theme	Lower-Order Theme	Example quote used in codebook	CSS	Player	Total
Clarity of Purpose	Coach Rationale	“I think I’d heard of other teams using it and it was a good factor to help prevent injury, that was one of the reasons I did it” – C010	11	n/a	26
	Staff Understanding	“Management, probably...were probably a little bit slower on it because they initially didn’t really see what they were going to get back out of it” – C004	8	1	11
	Player Understanding	“It’s like you know, someone else has it so we have to have it as well” – P002	n/a	8	13
Implementation Strategies	Introduction	“We spoke to them briefly on [the M-ASRM]” – C003	6	7	16
	Reinforcement	“We had about four meetings [on the M-ASRM] and then we were able to pick out the individuals and say ‘hey, how come you’re not using it?’” – C008	2	4	7
Players Perceptions of M-ASRM Use		“I think management had access, but I don’t know if they were actually going into it that often” – P006 “We didn’t use it to its full potential” – P009	n/a	10	45
Perceived Facilitators	Education	“I think if they’re educated on the information and know how it can be used to make you a better player, I think they might buy into it more” – C005	9	6	29
	Feedback	“I suppose knowing that there was someone at the other end of it made me over the next few days make sure I filled it in properly” – P001	8	8	32
	Multiple Season Use	“[The M-ASRM] was better this year than it was last year coz we’re more familiar with it” – P008	6	1	9
	Buy-In & Team Culture	“I was keeping up to date with reporting it to [the head coach] and the backroom staff so then [players] bought into it... them seeing [the head coach] buying into it was half the battle.” – C006	7	1	14
	Applied Importance	“[Players] were actually seeing [the M-ASRM] as a core, as an integral part of what they were doing” – C005	2	1	4

body, such as the team manager or local governing body. In other cases, there was evidence of a word of mouth recommendation or an ‘other teams have it, so we need it too...’ rationale.

*“I just felt from the point of view of the trainer, of the managers, for the physiotherapists, there was a lot of information that we could get back” - C004*

*“It’s probably unfair to say, but [the team manager] was willing to bankroll it, he was happy to pay for it but not really knowing how to get the most out of it” - C003*

**Staff understanding:** CSS felt that the understanding of the M-ASRM amongst the rest of their management team was varied and often coincided with that individuals experience and level of interaction with the system. The collaborative use of the M-ASRM between staff members was varied, with some triangulation between coaching, medical and sports science teams, while others were solely limited to interaction between the system administrator and head coach.

*“If you were to look at how many times management actually signed on [to the M-ASRM] I don’t think it would have been as much as probably needed, I think they saw it as a tool for the physio and S & C... They relied on us to extract the data and [say] ‘here you are’” - C003*

**Player understanding:** Some players showed a good understanding of the rationale for implementing the M-ASRM to provide further contextual and objective information to a coach. Equally, other players displayed little to no understanding of why or how the system was being used. These differences appeared to be related both to the individual’s interest and their team environment.

*“[The M-ASRM] was introduced as a sort of a, something that you had to log every day to keep sort of tabs on how you were feeling, in other words how sore your muscles were and how your mindset was and how you were feeling and give maybe... give the management a little glimpse into inside rather than just how you show up to training, I think” - P007*

*“I don’t have a clue what they do with it. I don’t know how they analyze it. I don’t know how often it’s looked at or what they’re looking at, how it’s highlighted or anything, I don’t know” - P001*

### Implementation Strategies

**System introduction:** Introduction strategies were very often a short, start of season presentation to the players. While some focused on understanding or ‘why’, others focused on practical use and ‘how’. One coach mentioned that players were encouraged to ask questions during the session. While some players displayed a good understanding from their team’s implementation, most experienced the ‘how’ presentation where their understanding of ‘why’ was often vague and uncertain. The language used by participants regarding the M-ASRM introduction often suggested brevity: *“there probably wasn’t a whole lot said about it”, “we spoke to them briefly on it”, “we just prepared a small presentation”*.

*“It was just a 5-10-minute tutorial given to us. He was explaining it on a tablet and went down through what he wanted us to fill in as an example player” - P001*

**System reinforcement:** Three CSS mentioned that

the presentation would have been done more than once or the topic revisited over the course of the season. Players varied in their perceptions of how often the system was reiterated and how necessary this was in their context.

*“We’ll have education days and it depends what’s on the agenda, like if we have something new, I might do 10 minutes [on the M-ASRM] and maybe the National League findings” - C006*

*“We changed management last year, they probably didn’t explain it, we just presumed it was a follow on from the last two years, nothing really changed with it” - P010*

### Players’ perceptions of M-ASRM use

Players were not always aware of the use processes of their M-ASRM and were often unconvinced that sufficient understanding and ability to use the data was evident amongst their CSS. Regardless of the original understanding of the rationale, players often felt that the system was not being used for its proposed purpose. In addition, one player expressed concern around the attitude of CSS towards measures of non-physical well-being.

*“I think it was a tick the box exercise. Our trainer is actually young and pretty much with it but at the end of the day the manager gets the final call, so I would say in this case he wasn’t able to completely control it, the managers have the say” - P005*

*“People have been pulled from sessions, so I think it is being used, whether the players are totally educated on it is another thing, but I do think the management use it as a tool to maximize training to benefit the group” - P007*

*“You’re aware that your [coaches] are looking at the physical side of things and if you’re carrying a knock, but then is the mindset side of things as looked after as maybe if you had a physical injury?” - P007*

### Perceived facilitators

**Education:** Education was recognized as being key to engagement by both players and CSS. Interestingly, players expressed the need for an applied understanding, while CSS were often vague with how education would be facilitated and evaluated.

*“I would love if it was made available to... the [players] that are interested in scoping in more, even if it’s only half a dozen - [to] set up a meeting for twenty minutes... and look at where we can maximize how we’re using [the M-ASRM]” - P003*

*“The main thing is showing and educating the athlete about how this system can be used to benefit them, make them better” - C006*

**Feedback:** CSS recognized that their use of the system and feedback of information to players was central to sustained use. However, they appeared to express some frustrations at the ‘spoon-feeding’ nature of providing constant feedback to a player which was not only time consuming but could hinder the development of their own self-regulation skills. Players referenced the need for useful feedback, reflecting that coach ‘contact’ in response to logged data is not perceived as sufficient.

*“I suppose it’s everyone’s own experience – if they get value from it, they will start to fill it in more – take more responsibility for it. If people aren’t sure where the data is*

*going or what it's doing I can see why there's a drop-off, but I think it's a balancing act of taking responsibility for it but at the same time getting some sort of useful feedback from it" – P001*

**Multiple season use:** Unsurprisingly, CSS felt that implicit knowledge and buy-in grew through the long-term use of the system, emphasizing the need for persistence.

*"You're hoping that they buy into it and I think it's gonna be a transitional period over a couple of seasons" – C007*

**Buy-in and team culture:** Some CSS were aware of implementation failings due to lack of use structure. In addition, they discussed the impact of stakeholder buy-in and the overall culture on the attitude towards and shared use of an M-ASRM.

*"It was just there in structure but not being used at all so that's an issue. If you're not gonna have someone who's going to have the time or the understanding to [use it well], then it's gonna be a waste of the system" – C011*

*"I think if introducing something like this is also reflective of the holistic high-performance environment that the management and backroom are trying to instill, I think [players] would take it up very quickly no matter what the level of the team" – C005*

**Applied importance:** Two CSS suggested that the use of an M-ASRM needed to be visible and an integral part of training and preparation with an equivalent emphasis placed on its importance to promote and sustain buy-in from all stakeholders.

*"It won't work within a team unless the team and more importantly the management buy into it... if [players are] not going to log [data], that needs to come from the management... there's no point in me saying 'she's not doing what I'm asking her' to do and then continue playing her, because there's no encouragement there" – C004.*

## Discussion

The aim of this study was to identify stakeholder perceptions of the implementation and understanding of a pre-existing M-ASRM in the elite Gaelic Games setting. Three main themes were identified: clarity of purpose, implementation strategies and perceptions of use, while a fourth theme, perceived facilitators, was identified as key to our understanding of why implementation was perceived as successful or not, and ultimately how to improve implementation as a result.

Clarity of purpose, or an understanding of why a system has been implemented and its role, is vital not only for positive implementation outcomes (Durlak and DuPre, 2008), but also to evaluate the efficacy of the system in respect to its proposed rationale. CSS rationale for implementing the system was varied, including the ideals of injury prevention and load monitoring, however, the major role of an ASRM in practice has been identified as communication and day-to-day monitoring or identification of issues (Saw et al., 2015b). While CSS were ultimately extracting value from the system, this was often different to the rationale which was originally given to players, and so they perceived the system as inefficient in its purpose. This

evidence suggests that the communication value of an M-ASRM is not being imparted to athletes in practice.

This lack of clarity was aligned with minimal staff understanding and engagement with the M-ASRM. It was evident that head coaches often delegated the responsibility of the M-ASRM, asking for outcomes or recommendations and ignorant to the process. Disengagement of key stakeholders such as the head coach through disinterest or lack of understanding is damaging to M-ASRM culture and successful implementation (Saw et al., 2015c) and this should be emphasized with all members of staff.

Introduction strategies from CSS were often given as a once-off presentation to players, focusing primarily on 'how' and secondarily on 'why'. Arguably this method is poorly imbalanced: learning how to use the relative aspects of a mobile application should be rather straight-forward for a young adult cohort such as those playing elite Gaelic Games, however, an understanding of 'why' and the perceived value would be more beneficial in promoting continued engagement (Kim et al., 2013). Given that time allocations for such education can be limited in an amateur sports setting, we suggest emphasis on educating the athlete on why and how the M-ASRM is being used, using relatable examples. The workings of the mobile system should come with use and can be supplemented with written instructions.

A troubling aspect of the implementation structures identified in this study is the lack of shared decision making surrounding the use of an M-ASRM. The adoption of an M-ASRM should come with the identification of a need and the ability of the M-ASRM to address this need (Saw et al., 2017a). These discussions should include player representatives who can voice their opinions and indicate their needs to CSS. Shared decision making has consistently led to better implementation and sustainability (Durlak and DuPre, 2008), yet, the descriptions of M-ASRM implementation in this study reflect a "we told them..." approach. Recommendations for building a supportive culture in ASRM use have been made (Saw et al., 2017a), yet we suggest that introducing an initial shared decision-making process would assist in many of these steps, particularly in building user confidence in the system and facilitating a smooth integration to the normal routine.

Education, feedback and introducing the measure early in an athlete's career were also identified as factors influencing ASRM implementation by Saw et al (Saw et al., 2015c). The present study highlights a need for structure around the provision of M-ASRM education and feedback to athletes. Interestingly, disparities appeared between players and CSS on what constituted education. Where CSS generally provided one or more group presentations as an 'overview', players expressed a desire for applied understanding to empower them to extract value from the system in a self-directed manner. Saw et al have suggested the method of co-regulation, whereby a coach would assist an athlete in self-monitoring until they are able to do so independently (Saw et al., 2017b). As such, education should aim to increase the athlete's awareness of their obligation to shared responsibility, which may empower them to approach self-regulation as they would their

nutrition or conditioning. Practically however, it is important to consider a coach's ability to engage in co-regulation successfully in amateur and team sports and suggests a need for all stakeholders to commit a significant investment of time into continuous M-ASRM education.

Similarly, there appeared an imbalance in expectations of what constituted feedback: where CSS were contacting players concerning a red flag or low score and potentially giving advice or implementing a solution, this was considered by CSS as feedback. However, players perceived a need for feedback to be structured, informative and actionable with a link to their overall goal – performance, and similar findings have been published previously (Saw et al., 2015c). In their study of ASRM in athletic preparation, Saw et al (Saw et al., 2015b) differentiated the initiation of athlete-staff communication as a way to 'contextualize' information received, whereas feedback was perceived as part of 'act' in the four-step use process described. Yet, there appears little differentiation in practice if this communication and feedback are intertwined. For example, if CSS contact a player to establish context for an athlete's data and follows this up with recommendations to redress it, (such as improving recovery or modifying training) this is often seen by the player as contact or monitoring, more so than structured feedback.

Lack of feedback could become a fracture in the M-ASRM philosophy if no visible actions emerge from data input and this can serve as a recipe for stakeholder disengagement and a lack of purpose surrounding an M-ASRM (Neupert et al., 2018). Challenges in providing feedback to players due to time constraints of CSS has been acknowledged (Saw et al., 2015b) and so it is unsurprising that feedback has become channeled through conversation. Furthermore, evidence suggests that athlete expectations for feedback on their athlete monitoring system have not been met in practice, and they can be conflicted in their own expectations of what constitutes sufficient feedback on a daily measure (Neupert et al., 2018). Stakeholder expectations in the facilitation of feedback should be realistic and clearly defined (Saw et al., 2017a; Neupert et al., 2018). In recognizing the limitations of their context, athletes may then be content to receive feedback on their M-ASRM less frequently, but with richer content that may include interactions with their performance, training and nutrition, for example.

Equally, CSS should seek to receive feedback from athletes on their M-ASRM to facilitate better understanding and user engagement and to date, this has not been represented in literature from applied sport. Athletes have been the passive recipients of a system which was chosen and implemented by those not expected to adhere to daily input. If as CSS, we expect athletes to be actively engaged in shared responsibility and sustained use, feedback should be facilitated in both directions.

It is unsurprising that CSS noted the value of sustained or multiple season M-ASRM use to enhance player engagement. It may also be beneficial for education and exposure to M-ASRM to begin earlier in a player's career, potentially through elite development squads. Early exposure and persistent use have previously been recommended as understanding and positive attitudes towards ASRM

may increase with use (Berglund and Safstrom, 1994). However, this could also be perceived as a barrier to M-ASRM use in elite Gaelic Games, given the often-transient nature of management teams who may hold their position for just a couple of seasons, particularly with less successful teams. This transiency of stakeholders creates a challenge to sustained M-ASRM use and the development of buy-in and should be addressed by the local governing bodies who appoint management teams.

Whilst stakeholder buy-in is an established requirement for successful implementation of an ASRM (Saw et al, 2017a), an interesting view from CSS in this study was the importance of translating this buy-in to an applied importance on the system. For example, when you 'reward' a non-adhering player by giving them a starting position on the team, this is not only giving that player little motivation to adhere but could create an environment of frustration and inequity amongst adhering players. This differential treatment and lack of fairness standards could result in interpersonal distrust and disharmony, unravelling athlete engagement and creating a negative perception of the team atmosphere (Van Breukelen et al., 2012). Consequently, the system not only adds nothing to athletic preparation, it also becomes more widely damaging with poor utilization.

In conclusion, there appears an underestimation of the requirements for successful M-ASRM implementation amongst stakeholders in elite Gaelic Games. Not all systems are created equal and not all environments are created equal. It is crucial to exercise due diligence prior to implementing an M-ASRM, and to appreciate the impact of social-environmental factors on stakeholder understanding and engagement. CSS and their athletes in elite Gaelic Games require clarity on the realistic capabilities of an M-ASRM and a structured outline of how the M-ASRM is to be used by both parties. "*The great enemy of communication, we find, is the illusion of it*" (William H. Whyte), and we note here an irony in the perceived communication value of an M-ASRM as the lack of communication between the stakeholders surrounding its use. There is a requirement for evidence-based approaches to education and engagement, and shared decision making to promote shared responsibility. Stakeholders must engage in better planning with respect to individual roles, structured responsibilities and realistic expectations of implementing an M-ASRM. We should learn from the negative experiences borne from a lack of stakeholder inclusion and understanding, and equally through positive experiences, recognize the value of applied understanding and the complexities of supporting user engagement.

### Limitations and future work

A limitation of the current study may be considered as the relatively unique processes of elite Gaelic Games as an amateur team sport with a professional attitude. Limited access to players and resources may affect the ability to ensure the most effective implementation of an ASRM, however, these limitations can mirror contexts of other amateur and semi-professional sports and make effective implementation potentially even more important.

Future work should consult team staff other than the M-ASRM administrator to gauge their perceptions and

understanding of the overall team value extracted from an M-ASRM. These stakeholders have the ability to affect the team environment and buy-in, yet are often overlooked in M-ASRM education and engagement.

## Conclusion

The results of this study demonstrate an underestimation of the practical requirements for successful implementation of an M-ASRM by users in elite Gaelic Games through lack of clarity in its purpose and use, and limited stakeholder understanding. M-ASRM use in this context can be facilitated by collaborative planning: creating transparency and understanding through shared decision-making and shared responsibility, and implementing clear use processes and structured feedback channels. These findings can be used to further the development of M-ASRM implementation guidelines based on the needs and preferences of users.

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### Key points

- M-ASRM are often not well prepared, understood or implemented by users in elite Gaelic Games.
- Shared decision making between athletes and CSS should be utilised for improved stakeholder engagement and successful M-ASRM implementation.
- Stakeholder engagement should be reinforced and maintained with an applied importance on the system and visible M-ASRM use by coaches and support staff.
- M-ASRM education strategies should be applied and actionable for athletes.
- Stakeholder feedback on an M-ASRM should be structured, actionable and bi-directional.

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