Exploring the use of Mobile Athlete Self-Report Measures in elite Gaelic Games: A Qualitative Approach

Running Head: Mobile Athlete Self-Report Measure Use in Elite Gaelic Games

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Abstract

Athlete Self-Report Measures (ASRM) are used in research and practice as an accurate, practical and accessible method of athlete monitoring. Mobile adaptations of constructs from validated ASRM have increasingly been employed for athlete monitoring in various sports settings, however, insights on the user experience and perceived value of these systems in the applied team sport setting has been limited. This study aimed to portray the experiences of stakeholders using a pre-existing mobile ASRM (M-ASRM) in elite Gaelic Games. Twenty-one stakeholders in elite Gaelic Games were recruited for this study (players n = 10, coaches and support staff n = 11). Participants completed a semi-structured interview with the lead researcher regarding their experience of using an M-ASRM in practice. Thematic analysis of the transcripts was conducted using NVivo 12 software. Results were defined under the themes of positive and negative user experience. Positive user experience was portrayed through M-ASRM uses and perceived value: communication and information disclosure, remote player monitoring, decision making and advanced planning, and player education and self-management. Negative user experience was portrayed through M-ASRM challenges: player adherence, player dishonesty, coach time and expertise requirements and socio-technical and system factors. Results outline the major uses of M-ASRM in elite Gaelic Games and importantly, highlight the key challenges experienced by stakeholders. These results can be applied by coaches, sports medicine professionals and sports scientists using or intending to use an M-ASRM, providing key considerations to employ for effective use in team sport.

Keywords: athlete monitoring; challenges; adherence; value; well-being; subjective

INTRODUCTION

Athlete self-report measures (ASRM) can be described as records of perceived physical, psychological and/or social well-being, which are generally completed on a regular, often daily basis (30). Validated self-report measures have been shown to accurately reflect training induced changes in athlete wellbeing (30), thereby offering a practical and accessible method of athlete monitoring for sport at many levels. Proposed value of ASRM in the applied setting include monitoring individual training load response (20), the identification of persons at risk of non-functional overreaching (6,8), overtraining (17) or injury (16), in addition to providing a tool for communication (29).

Traditionally, validated ASRM are administered in a paper-based or electronic format at regular intervals or specified training blocks. However, the time taken to complete these often long questionnaires and the paucity of infrequent data were leading factors in sports programmes beginning to create their own brief, customized self-report measures which could be administered daily (30,32). These custom measures generally incorporated Likert scale versions of individual variables from validated ASRM such as mood, stress, and fatigue, and were frequently administered digitally using accessible software such as Google Sheets to send, receive and collate information from athletes seamlessly, and in real-time. To meet the needs of modern athlete monitoring, web-based ASRM software systems have been commercially developed with a multi-disciplinary approach (29), offering additional features such as automated reports, communication forums and collation of previously siloed data sets. These custom, digitally administered ASRM designed for daily completion are our focus and will be referred to here as mobile athlete self-report measures, or M-ASRM.

The accessibility, affordability and purported benefits of M-ASRM have aided their growth in various sporting programmes (29), and recently, they have been adopted in Gaelic Games. Gaelic Games are the national sports of Ireland, known predominantly by their team field sports: football/ladies football and hurling/camogie (male/female versions respectively). Gaelic Games are amateur sports, but at the elite level they have developed to expect a demanding amount of commitment from athletes (18). Modern athlete monitoring practices, including M-ASRM, have been implemented and developed in elite Gaelic Games (18), however, little is known about how M-ASRM are being used in this context.

M-ASRM as a remote solution to personal and locational barriers to communication (29) is an appealing advantage for amateur teams such as those in Gaelic Games, where staff may only have access to the players for ~6-14 hours a week. ASRM have also been found to improve disclosure of information from athlete to coach (10), with the ability to provide additional information through a comment section being highly valued by coaches (23).

While M-ASRM have the ability to provide such benefits, many user-experience issues remain, including those associated with the measure itself, such as the interface design and accessibility, with the environment, such as stakeholder buy-in and data security (26) and with support, such as compliance and the perceived role of an ASRM (28). User-centered design approaches are recommended for the development of mobile technology platforms and applications as they can help mitigate user-experience issues such as poor user-adoption (3) and lower levels of user-engagement (35). Indeed, understanding the user experiences of stakeholders relative to the needs of a particular sporting context has been recognized as a crucial step in the implementation of sports interventions and programmes (12). Although the use of self-report measures in athlete monitoring is increasingly recommended (15,31), research in this area is in its infancy and there is limited evidence concerning how M-ASRM are used in the applied setting (29), particularly in team sport environments.

Successful implementation of an M-ASRM in practice is a complex coordination of factors which are related to discrete contexts and environments (25). Exploring the use of M-ASRM in Gaelic Games provides a window into a new context: how M-ASRM are used in an elite field team sport and the challenges that are experienced due to the personnel, financial and access limitations of an amateur sport setting. Therefore, the aim of this study was to investigate the user experience of M-ASRM in elite Gaelic Games to inform future implementation and use of these systems in team sport environments. We present the positive and negative user experience of an M-ASRM in elite Gaelic Games, through the perceived value gained from using such systems and the challenges experienced by stakeholders.

METHODS

Experimental Approach to the Problem

The qualitative approach of semi-structured interviewing was employed to gain an in-depth insight into players and coaches' perceptions and experiences of M-ASRM use in their

individual contexts, as it can allow disclosure of important and often hidden aspects of human and organizational behavior (22). In addition, semi-structured interviewing allows all participants to be interviewed relatively systematically with the use of a topic guide, while allowing them to provide responses in their own terms and language (22).

Subjects

Twenty-one stakeholders in elite Gaelic Games were recruited for this study (players n=10, coaches and support staff n=11, from 15 teams). Participants were recruited by a combination of opportunity and snowball sampling where invitations to take part were sent via email. Inclusion criteria were: use of an M-ASRM system for a minimum of one month, stakeholder of an elite Gaelic Games team and 18 years of age or older. There were no exclusion criteria. Written consent was obtained for interviews in person while verbal consent was obtained for telephone interviews. Ethical approval for this study was obtained through the University College Dublin Human Research Ethics Committee. Participant characteristics are presented in Table 1. Participants were widespread in their team's geographic location and five participants were familiar to the lead author. Nine of the 11 coaches and support staff (CSS) were the main system administrators for their teams, with two assuming a secondary role in the M-ASRM use. The most commonly used M-ASRM among participants were Metrifit RTP (Ready to Perform) (n=17) and Metrifit Elite (n=4) (Metrifit, Health & Sport Technologies Ltd, Greenore, Louth, Ireland).

**********Table 1 near here**********

Procedures

Each participant completed a one to one interview with the first author at a location convenient to them or via telephone if necessary. Interviews were approached with the use of a topic guide to explore participants perceptions of M-ASRM use in their individual setting (as relevant to each group, i.e. player or coach/support staff). Table 2 contains the section of the topic guide as relevant to this study. Open-ended questions were employed flexibly to allow for new areas of conversation to emerge and be explored with the participant. The lead author assumed an 'insider' role in the interview (7), having previously worked clinically with M-ASRM in elite Gaelic Games. The lead author's experience may have shaped the interpretations of the conversation and also enabled the building of an initial rapport with participants (9). Interviews were audio-recorded and transcribed verbatim by the lead author.

Anonymized codes were applied as follows: players were attributed the letter P with a number identifier, while coaches and support staff were attributed the letter C with a number identifier, for example: P001 or C001.

**********Table 2 near here**********

Statistical Analyses

Thematic analysis of the transcripts was conducted using NVivo 12 software (QSR International Ltd, Victoria, Australia). A theme was defined as something important in the data related to the research question, which represented a level of patterned response or meaning within the data set (5). An inductive approach was employed to allow patterns to emerge from the data (34), with the topic guide providing an initial structure for the codebook (24). Thematic analysis involved careful reading and re-reading of the data to identify patterns, assign codes, and formulate themes and sub-themes (5,14). A sample of the transcripts were analyzed by two authors and key concepts were discussed and challenged in the development the codebook (11,14). Ensuring analytical rigor, the data were analyzed and coded independently by the first two authors as an 'insider' and an 'outsider', and subsequently compared and discussed to resolve discrepancies in coding concepts (33). The authors adopted the 'critical friend' model in data collection and analysis, challenging the data interpretations and knowledge construction throughout to encourage reflexivity (9).

RESULTS

Participants were asked to consider and discuss how they use the M-ASRM in their individual contexts. Results are presented under two overarching themes: positive & negative user experience. Table 3 represents the results in units as discussed by participants.

**********Table 3 near here**********

Positive User Experience

1. Communication & Information Disclosure

Communication value was described as a medium to disclose information, a method of communicating efficiently with a large panel of players and data to spark and inform conversations both with players and other CSS.

> *"It gave context and content to actually start a conversation rather than just your usual 'hellos'" - C002*

> *"It definitely has helped I'd say in terms of just getting to know your players, you know, there's 30 players there, it's very hard to talk to them before and after every training session" – P004*

> *"She had spent the whole night with her mum, and she put on [the M-ASRM] that she was exhausted and in the comments section she wrote that her mum had been quite ill in hospital. It's something that would have been very difficult for her to come up and say to the lads: 'look, can I let you know what happened?'" - C004*

2. Remote Player Monitoring

CSS spoke about the advantage of remote player monitoring such as the ability to understand players in a more holistic manner and outside of their face to face interactions, with the added benefit of their players feeling like they are being cared for.

> *"It's good to know where the players are at mentally, because at the end of the day they're people first and athlete second" - C009*

> *"[The] 145 hours that they're not with the team, I think that's where the real challenge is and ultimately that's probably where most of the gains are made because everybody's more than likely training the same collectively, it's what you are doing away from your collective sessions that in many cases is the key difference" - C005*

Similarly, players valued the ability to produce data and recognized the merit of the early identification of potential problems.

> *"It could be something coming and at least if a physio or manager can get in there quickly before it actually does happen then you can [reduce] injuries" - P004*

3. Decision Making & Advanced Planning

CSS described their M-ASRM system as giving them confidence in their training methods, being used to make decisions and plan sessions ahead of schedule both at an individual and group level, based on the information coming in.

> *"Yes, you were probably making right decisions from the start, but this validated what [the coach] was doing and just gave him more confidence in the programme he was running" - C003*

> *"Myself and medical are over and back between each other, in contact the whole time and we'll say leading up to a session, they'd be telling me if players might have injuries logged or knocks logged, so they're letting us know before training what players can and can't do" - C009*

4. Player Education & Self-Management

CSS perceived that using the M-ASRM system could facilitate implicit learning and self-regulation among some players but referenced little evidence of this happening in practice.

> *"I would have imagined and hoped that the fact that they're monitoring everything every day and they're actually writing down how they feel, as in how tired they are in the morning, that they get to know themselves a bit better, that they actually become more aware of how they feel themselves after training" - C004*

> *"Maybe even puts into a players mind, right maybe I should be a bit more proactive in managing this and get in touch with a physio earlier or management earlier, rather than waiting 'til last minute or turning up to training and springing it then that you feel a bit tight or feel a bit down, or whatever it is that they don't feel up to training" - C010*

Players perceived that inputting data to the system could facilitate them in thinking more purposefully about how they were feeling and preparing, potentially encouraging good habits. However, many players felt that they would have been aware of this even without the use of an M-ASRM system.

> *"I'm very conscious of it anyway without me even marking it down" - P004*

> *"Yeah like generally if you're feeling tired you kinda know about your recovery with no [help] at all" - P006*

> *"You don't want to write down that you ate badly so you're keeping an eye on what you're eating and making sure that you're eating well" - P008*

Negative User Experience

1. Player Adherence

As a common barrier to the use of self-report systems, user adherence was a key challenge for the participants in this study.

"The system itself works perfectly, the only issue is people and adherence, so I think if people aren't filling it out it becomes worthless and useless and just a pain in the ass and a waste of money" – C002

Contextual Factors

Adherence and the culture of M-ASRM use was, in some scenarios, dictated by the time of year and the team environment with respect to the schedule, results and other contextual factors.

> *"Recently the compliance levels have dropped, they had a quite a poor league and a week's break then with their clubs, it will be something I will be addressing. The way the season has gone has dictated the way [the M-ASRM] has been utilized because it's a different atmosphere in that we're trying to maintain our team unity and a meaningful feeling about being here even though the season hasn't been as successful as they would have liked" – C010*

Individual Factors

CSS felt that adherence levels were individual to each player and their interest, and that such differences were to be expected when dealing with different types of people.

> *"You know you'll have that bell curve there where you might have 20% that are highly into it and they will always be on time, you might have your 40-50% who are you know pretty good and in your bell shaped curve they're your main group, and then you'll have your 5-10-15% who you pull your hair out with them, they don't login on time or you know they don't respond to it the way they should but when you're working with a group of 35 that's to be expected" – C005*

Although the common expression was that using the system was not a burden, daily adherence was still described by some players as inconvenient.

> *"Even as it is it's a bug bearer for certain players, so you don't want to be… it's hard to get the balance coz players are a nightmare, it only takes 30 seconds and they're still giving out about it" – P004*

Self-perpetuating negatives

A concern for players related to their internal response to logging negative experiences, for example, a poor night's sleep or a poor performance. Although players were able to recognize the value in self-monitoring, they described that sometimes logging made it challenging to keep a positive mindset or would reinforce the negative point in their mind, causing them to avoid filling out the system in such a scenario.

> *"The day of a game if you're logging that you're tired and that day your energy levels are down, I think psychologically it's a negative for you when you're trying to switch that mind frame around" – P004*

Interestingly, only one coach mentioned this possibility.

> *"Certain types of personalities could get too caught up in it or if someone is very low and they're putting in low scores and they're seeing these red flags and red markers every day that might be a negative effect" – C010*

Encouraging Adherence

CSS described that encouraging adherence was time consuming and exhausting. Methods applied in attempting to improve adherence were mainly through negative reinforcement, including sending reminders, naming and shaming non-adherent players, a fine system, and peer pressure, while positive reinforcement included using the system for other reasons - such as uploading match statistics, creating convenience and peer influence by encouragement being player led.

> *"There would be messages put up [on the team Whatsapp group], if you didn't do it you were in trouble" – P002*

> *"I think had I have just introduced it and left it, it would have rotted and sank but because I was so persistent about it and calling lads up every day…" – C002*

> *"The main physio has her log in as well, so she'd be connecting with players when they're rehabbing injury and stuff, keep annoying them through that and she's using it then to actually upload her programs and that through it, so kinda forcing them to use it" – C009*

One coach made an insightful observation regarding the method of sending reminders comparing his previous customized self-report measure in Google Docs to the M-ASRM software, noting that having a direct link or "click here" tab to a Google Doc was resulting in better adherence outcomes than a reminder message to access and complete the M-ASRM. Therefore, creating convenience through a link to take you directly to a questionnaire versus a reminder to manually exit one mobile application to enter another was resulting in better adherence.

> *"Google docs was always sent through the group Whatsapp, …it would literally just be a little tab they press in, it only takes 60 seconds and they're done, whereas [with the M-ASRM] … I know it's simple and it probably takes just as much time but for some reason they weren't going from that [reminder] message on Whatsapp to actually going into [the M-ASRM] and doing it, whereas the [Google Doc link], because it was in front of them, they just pressed on it" – C003*

Backdating

Due to challenges with adherence, M-ASRM often allow information to be backdated. While both players and CSS felt that the M-ASRM mostly reflected the athlete state, they spoke about backdating as a challenge to data accuracy.

> *"I suppose if you forgot to fill it out for 2 days and you were trying to think back it was hard" - P002*

> *"Occasionally you'll have a situation where a girl completely forgets to log, and she misses out Monday or Tuesday and then she has to throw her mind back and then you know the information she's giving you for Monday and Tuesday is definitely wrong" - C004*

2. Player Dishonesty

Dishonesty was mentioned with respect to both physical and psychological measures, including rate of perceived exertion (RPE). Dishonesty appeared to be normalized and justified to players with respect to certain scenarios.

> *"I do see now that we talked through it that there would be a sort of a trend to lie maybe, well not lie, just sort of… put in not-honest scores" – P007*

Factors Influencing Honesty

More experienced players appeared to be more honest, commenting on how they might have responded differently to the system when they were younger and often perceiving the younger players to be less honest. Fear of injury, poor performance or a negative impact on the team influenced a player to be honest. One CSS spoke about the need to separate the system from one which influences decision making to promote honesty.

> *"If I am carrying a knock, just flag it because inevitably it will have a bad effect on my performance if I just gloss over it and hide it" – P007*

> *"It's knowing me and knowing my role; that there's gonna be no major decisions made based on your wellness" – C006*

Factors Influencing Dishonesty

'Faking good' – distorting self-report data to appear more favorably

"[With the M-ASRM], you're trying to be honest, but you're never trying to be at a disadvantage" – P007

There was a concerning trend among players of flippant dishonesty and conscious bias, often concerning team selection or wanting to train in the lead up to a game.

> *"Definitely I was a lot more sore and sleep wasn't great but I wasn't logging honestly because I didn't want them knowing the state I was in I suppose, so there probably is an honesty factor there coming up to games" – P004*

> *"One player in game week, his scores were coming dramatically up and more than they should have been based on training the week before, so I remember the manager having a word with a fella and we found that he [thought] if his wellness markers weren't coming up that he would be in danger of not being selected for the game. There was [another] player, he was working long hours right up to the game and we didn't find this out until the week after" – C006*

'Faking bad' – distorting self-report data to appear less favorably

Significantly more references were made to 'faking good' than 'faking bad'.

> *"Maybe dishonest guys in the panel… they would put things down to try and make themselves [seem worse than they are], hoping that they might get pulled from training" – P003*

Privacy

Concerns around privacy appeared to be very individual and referred mainly to the type of information being inputted and the personnel who had access to this information. Players were not always aware of who had access to their data, and some were uncomfortable with sharing their personal information. Only one coach made reference to players not being comfortable to disclose personal information.

> *"At times, you feel like 'I'd rather keep this to myself', it's a bit invasive maybe" – P001*

> *"You would have to trust that it was being looked after by the management and that the data was safe. There wasn't a whole pile of personal information" - P002*

3. Coach Time & Expertise Requirements

"I think you just need to have initially the understanding but then kinda the foresight to see how you can get the most out of this" – C005

One of the clearest barriers towards effective M-ASRM use for CSS was the time demands of tasks such as ensuring adherence, analyzing data and generating reports in addition to disseminating this information to the relevant parties. Because of this, there was a common perception that the team hadn't been able to achieve optimal use of the system.

> *"There is time in using the system as a coach and then following up on players. If you're giving the [M-ASRM] role to a physio along with everything the physio is doing, it's probably not gonna work out as well" – C011*

> *"Serious time goes into it. Could I put in more time? Yes, I could. But for myself in terms of doing [another full-time job], it's tough going… It's hard to have people on a part-time basis looking at this stuff" – C006*

Some players also had an awareness of the limitations of the amateur nature of the game with respect to the culture trying to be introduced.

> *"I think the whole thing needs to be organized better, one or two people looking after it and they're properly looking at the data in terms of what's going on with players and have more control there and more support for players, whether it's [with work] or whatever it may be" – P004*

> *"It's really very much down to whoever is looking after [the M-ASRM], that he's very much on top of it…I'd say it's hard managed" – P010*

4. Socio-technical & System Factors

"Not the be-all and end-all I would say, it still doesn't replace clinical judgement or developing a relationship with a player I would suggest" – C007

Need to contextualize & interrogate data

CSS felt that the use of the system required a comprehensive understanding of individual players and sometimes further information (such as a message or comment) to correctly contextualize the data they input. It was also necessary to interrogate the data or supplement it with an objective measure to combat dishonesty and identify unusual or unexpected self-report data.

"If they don't comment on it, I would probably text just to see what the issue is or how bad it is because sometimes a 2 or a 3 [out of 5] is not enough to go off. Some fellas are very good at using the comment section to say 'oh it's just a bit of tightness, I've had a week of driving at work' and that's fine but in terms of the lads just going 2 or 3 and leaving it at that, then it requires more communication from my end just to see what the issue is" – C011

"I guess because we use both objective and subjective it's very difficult to [manipulate data] and I actually see more players trying to manipulate a GPS than try to manipulate subjective markers" – C005

Communication Limitations

CSS often spoke of how face-to-face conversation was a more valuable method of communication and of developing a coach-athlete relationship than using a software system. Clinical judgement and communication skills were still central to addressing any issues.

"I think wellness is a bit more holistic, where it needs a bit more of a personal touch than actually just pinging in numbers into something" – C003

"I think actually having the conversations one on one is more impactful, certainly from the athlete's perspective or the athlete's wellbeing, even just psychologically I suppose that they have someone to vent to" – C002

Question Design

Players often felt that it was difficult to portray how they felt accurately with the system descriptors, with other references to careless reporting due to the 'numbers' nature of a 1-5 Likert scale.

"Sometimes I feel like the metrics on it aren't capturing exactly how you're feeling. If you could kind of…if it was compulsory to put in a comment at the end that it might sort of give management a bit more clarity on how you're feeling" – P006

"I suppose I don't fill it in to the greatest amount of detail it's more just ticking the numbers" – P001

DISCUSSION

The aim of this study was to investigate the user-experience of stakeholders using a pre-existing M-ASRM in elite Gaelic Games. Major themes that emerged from analysis included its perceived value as a communication platform, its role in remote monitoring and decision-making, challenges with 'buy-in' throughout the organization, time and expertise requirements, and concerns about the honesty and accuracy of data. The use of the M-ASRM and perceived value were similar to previously published work in the use of ASRM (29), and while some of the challenges have been mentioned previously (26), the team sport context investigated in this study allowed for new perspectives to emerge.

Previous work has detailed the facilitation of communication as a major role of an ASRM (29), and similar results have emerged in this study. For CSS, M-ASRM were perceived to provide a level of communication that was unattainable in any other way. The value of improved communication channels can potentially be considered more valuable in the context of amateur team sports such as Gaelic Games where resources, access to players and time constraints can make monitoring a team of athletes incredibly challenging. Gaelic Games may also benefit from remote monitoring, information transference and informed decision making due to the respective Gaelic Games structures allowing for athletes to play on multiple teams at the same time, for example with their club, university and county (19). Due to these challenging player demands and difficulty in managing training load, player welfare in elite Gaelic Games is a topical discussion (18), and the increasing use of M-ASRM in this context may be somewhat attributable to this issue.

While the value of an M-ASRM was visible to the stakeholders, its ability to promote player education and self-management reflected an interesting disparity between players and CSS. Players perceptions were variable, with potentially more self-aware individuals feeling that they didn't need an M-ASRM to highlight to them what they already knew as responsible athletes. CSS had few examples of self-regulation happening in practice, and more so assumed that implicit learning and self-regulation would emerge from sustained use. In previous research, a coach described this approach as being too linear and requiring the athlete to know when and how to respond to their data (29). While the current study showed some potential for M-ASRM to promote positive athlete behaviors, the experience was highly individual. Further research is required to investigate methods of empowering self-regulation in athletes with individual preferences, knowledge and interests, particularly in a team sport environment.

Our findings also suggest that whilst individual 'buy-in' can be central to M-ASRM success, team sport applications appear to create some new considerations for M-ASRM adherence. The challenge of promoting adherence in this study appears compounded by the dynamic environment and the emphasis or lack thereof placed on the M-ASRM due to the multi-factorial nature of team performance. The M-ASRM system, treated as an adjunct, appears often to lack priority if deeper challenges were emerging, such as the team having an unsuccessful season. It may be even more difficult therefore for 'weaker' teams to prioritize

M-ASRM use in scenarios where more pressing issues are to the fore. This may be considered as a consequence of amateur sport and is a significant barrier to M-ASRM use, as persistent use over a season can help to develop a positive attitude towards an ASRM (2).

At an individual level, unfavorable responses to self-report has been mentioned previously where athletes felt that monitoring served as a negative reinforcement of their fatigue, which was a concern especially during competition phases (21). In other contexts, psychological monitoring has been discontinued in the lead up to competition due to the impact of external stressors and the possibility of negative feedback (2). Previous research has suggested that individual characteristics should be assessed to determine the appropriateness of ASRM use (27), however, this approach may not be desired or feasible in a team sport environment. The fact that only one CSS in this study referred to the possibility of negative reinforcement suggests that the issue is not widely recognized or appreciated. CSS should seek to acknowledge negative reinforcement with their players and create open communication channels to address each scenario individually and collaboratively with the athlete.

The findings also suggest that backdating of data was permitted in most cases to reduce the impact of non-adherence, yet this was one of the leading concerns with accuracy as participants perceived this data to have little chance of providing reliable information. Self-monitoring in performance appraisal, for example, trains users to record information accurately and as it occurs (13), yet the default timeframe for backdating data on the Metrifit RTP system, for instance, is three days. CSS should consider what they are monitoring and why with regards to reasons for allowing backdating of information. If the data is almost inevitably incorrect, then where is the value in allowing the backdating of information, if merely to fulfil a data set? Backdating in this study, seemed to be promoted as a punishment or method of negative reinforcement – i.e. ‘you won’t get away with non-adherence’. Whether trying to have the perfect data set for research, analytical or punishment purposes, CSS should seek to minimize the instances of collecting inaccurate information.

Dishonesty is an inherent issue with self-report and a further challenge for CSS to ensure data accuracy. Whilst a recent survey of elite female sprint athletes indicated that the majority of respondents were honest in their responses, they were more likely to be dishonest where they felt disproportionate training modifications were arising from their data input (21), and elsewhere, where they didn’t want to highlight poor behavior or preparation (26). Our

findings show that dishonesty was an evident problem in this study, appearing as a form of social desirability bias and perhaps highlights that an alternate approach to self-report is required for team sports. Athletes have previously expressed concern of being compared to other athletes who may interpret a scale differently (28), which is of particular interest in elite team sports such as Gaelic Games, where selection and the desire to appear favorably over teammates appears to influence M-ASRM reporting. CSS felt that feedback and acting on the data promoted honesty, but equally this could promote dishonesty if players think they will be removed from training. A further attempt to promote honesty was removing the idea of an M-ASRM being used as a decision making tool, and as such, is in line with current recommendations (4) – although to do this could be ironically misleading when some CSS spoke of using it to pick their game-day squad. If we address the factors which were perceived to promote honesty in this study, we should focus on honesty as a central tenet to group success and progression, provide efficient feedback to players on their data, address dishonest responses and reiterate the importance of honesty to facilitate peak athletic performance through informed decision making.

Honesty when completing an M-ASRM is also topical with recent concerns regarding data privacy, yet preliminary research showed that privacy concerns were unlikely to influence ASRM use by athletes (28). Improved information disclosure is unquestionably valuable and the CSS in this study spoke about scenarios of relevant information that they may not have otherwise garnered, however, in some cases players perceived this to be personal information that they were not comfortable to share. This could be influenced by Gaelic Games often having a dynamic and changeable team scenario with fewer personal relationships than with individual athletes or smaller training groups. There appeared in some scenarios to be a lack of clarity regarding who had access to players data and this should be addressed in line with previous recommendations to offer a clear outline of who has access to M-ASRM data and why (25). It is important to note here that no ASRM data should be shared or shown to other team members as it might with quantitative metrics: this occurrence was only referred to by one participant in this study but is important to consider nonetheless.

The use of M-ASRM in training prescription, modification and planning in advance has been mentioned previously (29) and in this study was found to be valued by CSS to validate their

methods and decisions, both to themselves, their colleagues and players. The challenge with this use of M-ASRM is that players expect action to be taken from their data as a result; demanding significant time from CSS to contextualize and respond appropriately, with inappropriately weighted responses potentially influencing future dishonesty from a player (21). This challenge for CSS appeared to reflect a significant underestimation of the time and expertise required to facilitate successful use of an M-ASRM by all parties in elite Gaelic Games. Where the instruction to implement an M-ASRM came from a higher level such as the local governing body or team manager, there was an assumption that the system would function almost independently through automation of reports and red flag identification. However, this failed to acknowledge the time required to ensure player adherence to the system, to analyze and contextualize the data to make appropriate decisions based on it, and to communicate this to the relevant parties, bearing in mind that the system administrator was generally assuming this role on top of their already part-time position. Lack of foresight and planning was also evident where the CSS themselves were the instigator in implementing the M-ASRM. Discrepancies between predicted and actual benefits of athlete monitoring due to lack of human resources has been described previously (1), and in this study, many CSS perceived that they were unable to use the system to its "potential" as a result. This suggests that there is an unrealistic expectation of the investment required for successful M-ASRM use.

Furthermore, the negative experiences of the socio-technical limitations of M-ASRM use reflect a key consideration in the adoption of brief, customized self-report measures. While condensed measurement reduces burden on stakeholders, it also reduces the level of information that is transmitted. Where M-ASRM use often required extra contact to contextualize data, or extra analysis with other data sources to ensure accuracy, it is imposing more load on the system administrator and potentially detracts from the proposed value of the M-ASRM. It was also difficult for players to portray feelings like their mood, for example, on a 1-5 Likert scale, with results suggesting potential detachment from the system and careless reporting. It is evident that CSS recognize that a self-report system will never fulfil all elements of communication necessary to develop a coach-athlete relationship, and there remains limited evidence to suggest that ASRM use improves athlete self-regulation. It is

essential, therefore, that an M-ASRM is recognized both for what it can and cannot provide to users.

The results of this study concerning the use of M-ASRM in elite Gaelic Games align with those previously published, identifying undesirable athlete responses and intervening as necessary, while facilitating communication between athletes and CSS (29). However, for successful use, athletes are expected to routinely complete an ASRM and CSS are expected to quickly interpret and use this data (29). Given that player adherence, dishonesty and coach time and expertise requirements are three of the main challenges experienced while using an M-ASRM in elite Gaelic Games, this creates a disparity between the optimal and the realistic use. While M-ASRM have demonstrated value in athletic preparation for this cohort, it is crucial for CSS to appreciate the challenges encountered and the contextual limitations of M-ASRM use.

This study adds to the current knowledge on ASRM use in applied sport and provides new interpretations of key user experience factors such as adherence, dishonesty, and data quality and limitations as they present in a team sport environment. Additional learnings concern the contextual nature of M-ASRM value to its stakeholders, relative to the engagement and resources which the M-ASRM is afforded. These perspectives can be utilized in the decision-making and user-centered process design for M-ASRM implementation.

A limitation of the current study is that most participants had used a single type of M-ASRM, so findings on perceived value may differ with other M-ASRM depending on the system features. System features may also influence user engagement, adherence and the challenges related to system factors. It should also be considered that Gaelic Games present a relatively unusual elite team environment in that the athletes are amateur, and staff generally work in a part-time capacity, which may affect the ability to use the system and the effect of the burden on CSS time and expertise. The small representation of females in each sample is reflective of the fewer number of females working in coaching and support staff roles and also the fewer number of female teams (ladies football and camogie) who are using M-ASRM – potentially due to less funding and resources. The dominance towards football involvement in both samples is reflective of the higher number of teams who compete at the highest elite level in football compared to the other three field sports. While the dominance of league division one representation is reflective of the higher-level teams generally having better resources and personnel to obtain and implement M-ASRM.

PRACTICAL APPLICATIONS

The results of this study offer a number of key considerations for CSS who are using or intending to implement an M-ASRM both with team and individual athletes. Prospective M-ASRM users can learn from the use of and value extracted from an M-ASRM in elite Gaelic Games when considering the implementation of a self-report monitoring system in their context. CSS can expect to benefit from the facilitation of communication, increased information disclosure from athletes and data to inform daily decision making, while the potential impact of M-ASRM use on athlete self-regulation can also be evaluated.

Equally, this study outlines the limitations and challenges associated with the user experience of an M-ASRM in an elite but amateur team sport context. CSS should be cognizant of the user-adoption factors which influence athlete adherence in team sport, such as maintained emphasis on the system importance from all stakeholders and encouraging individual buy-in, considering internal motivation and perceived usefulness. Dishonesty to gain a competitive advantage is an evident problem with an M-ASRM in team sport which should be especially considered in the lead up to competition. Promoting honesty may be facilitated through addressing dishonest responses and reiterating the requirement for accurate data to optimize individual and group performance.

Importantly, this study has highlighted the burden on CSS time and expertise in ensuring adherence to an M-ASRM, in analyzing, contextualizing and corroborating data, in addition to disseminating this information to the relevant parties. Furthermore, the socio-technical and system limitations should be considered to appreciate an M-ASRM both for the value it can and cannot provide to CSS. These findings can be used to carry out an initial evaluation of the appropriateness of M-ASRM implementation in a given context and provide an outline for realistic use and managing stakeholder expectations.

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680 ## Table 1: Participant Characteristics

Characteristics	*CSS (n=11)*	*Players (n=10)*
Male/Female	10/1	8/2
Mean Age (years) ± SD	37 ± 11	27 ± 3.6
Role		
Strength & Conditioning Coach	4	n/a
Sports Scientist	2	n/a
Physiotherapist	2	n/a
Manager (Head Coach)	2	n/a
Nutritionist	1	n/a
Sport		
Football	7	6
Hurling	2	2
Ladies Football	1	1
Camogie	1	1
League Division		
One	6	5
Two	2	1
Three	1	2
Four	2	2
Team Experience (seasons) *± SD*	1 - 13 (mean 4.5 ± 3.5)	3 - 14 (mean 8 ± 3)
System Experience (seasons) *± SD*	1 - 4 (mean 1.9 ± 1.3)	1 - 3 (mean 1.9 ± 0.7)

681 CSS = coaches and support staff

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684 ## Table 2: Interview Topic Guide

	Coaches and Support Staff (CSS)	***Player***
General Use	How do you use your ASRM? What actions are taken from it? How has using the system influenced your coaching practices/role?	Can you tell me about how the ASRM is used by your team? What do you do with the data? How has using the system impacted you as a player?
Views	Can you tell me your views on the system? Positive/negative	Can you tell me your views on the system? Positive/negative
Adherence	How do you perceive the levels of compliance with the system?	Can you discuss what influences you to log your information?
Data Accuracy	What are your thoughts on the accuracy of the data?	Can you tell me about the thought you give to the information you input?
Data Privacy		How do you feel about being monitored? How do you feel about sharing your information?

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687 ## Table 3: Results Representation

Theme			*CSS Quotes*	*Athlete Quotes*	*Total Quotes*
Positive User Experience	Communication & Information Disclosure		11	6	63
	Remote Player Monitoring		9	5	42
	Decision Making & Advanced Planning		11	5	51
	Player Education & Self-Management		6	10	50
Negative User Experience	Adherence	*Contextual Factors*	9	3	23
		Individual Factors	11	8	35
		Enforcement	11	7	43
		Backdating	4	2	8
	Dishonesty	*Honesty*	4	6	12
		Faking good	5	6	28
		Faking bad	3	2	8
		Privacy	4	8	19
	Coach Time & Expertise Requirements		10	4	48
	Socio-technical & System Factors	*Contextualising & Interrogating data*	9	0	16
		Communication Limitations	5	0	10
		Question Design	3	5	17

688 CSS = coaches and support staff

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