Perceptions of elite volleyball players on the importance of match analysis during the training process

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Abstract

In the present study, athletes from an elite female volleyball team (N = 12) experienced an intervention program, based on the provision of information from match analyses, throughout a single season. The information provided related to individual and team competitive performances, as well as the performances of opposition teams. Our aim was to assess the study athletes' perceptions of this intervention once the season had ended. We used a semi-structured interview method and a thematic analysis of interview content using the categorization and coding procedures outlined by Charmaz (2014). Regarding the match analysis related to the study team, 95.65% of the comments made by the players were positive and only 4.34% was negative. Players indicated it was useful to understand the negative aspects of their game in order to correct them, and positive aspects in order to motivate weekly training. All of the comments regarding match analyses of opposition teams were positive, with one highlight being that this helped players to be informed about the oppositions' game and to be more prepared for upcoming matches.

Keywords: volleyball, match analysis, athlete, elite level.

Introduction

Performance analysis is fundamental to the process of sport training because it allows for an objective interpretation of the complex reality in which performance and performance improvement occurs (Butterworth, O'Donoghue, & Cropley, 2013). Performance can be assessed from a number of different perspectives (biomechanical, physiological, psychological, etc.), although over the last decade there has been a notable growth in the analysis of performance via match analysis, which itself is accomplished through notational analysis (Wright, Atkins, & Jones, 2012).

In line with this trend, it is considered crucially important that coaches have the ability to evaluate athlete's performances in order to identify weaknesses and to provide appropriate technical/tactical corrective feedback (Nelson, & Groom, 2012). This ability, however, is one of the more difficult for coaches to acquire. Due to the risk of subjectivity and the limitations of human memory (Knudson & Morrison, 2002), it is advantageous for coaches to have access to accurate and reliable tools for match analysis (James, 2006; Painczyk, Hendricks, & Kraak, 2018). Such tools should provide coaches with the necessary data to facilitate an understanding of the game (Bampouras, Cronin, & Miller, 2012; Butterworth, Turner, & Johnstone, 2012).

To this end, match analysis involves selecting and collecting data on the most important aspects of the game (Gesbert, Carrel, Philippe, & Hauw, 2016) in order to assess the strengths and weaknesses of a team and its component players (Sarmento, Bradley, & Travassos, 2015; Wright, Atkins, Jones, & Todd, 2013). The ultimate objective of this process is to improve the game of the team and to counter that of the opposition (Hughes & Franks, 2004; Middlemas, Croft, & Watson, 2018; Wright et al., 2012; Wright et al., 2013). Specifically, the obtained information can reveal positive aspects of a team's performance and serve to reinforce them, but also negative aspects,

which require attention and correction in training (Jenkins, Morgan, & O'Donoghue, 2007; O´Donoghue, 2006). From match analysis, it is also able to provide information about the strengths and weaknesses of opposition teams, which is useful when preparing for future encounters (Sarmento et al., 2015).

Prior studies have highlighted the importance of transmitting such information to the players that make up a team (Wright et al., 2012), both in meetings before and after a competition (Middlemas et al., 2018). These transmissions can occur in multiple different ways, to individuals or to the team collectively, and can include numerical data and/or video (Cushion, Armour, & Jones, 2006; Fernandez-Echeverria, Mesquita, González-Silva, Claver, & Moreno, 2017; Groom, Cushion, & Nelson, 2011; O'Donoghue, 2006). For any particular game, this process provides players with feedback on specific aspects of the game, including those related to individual and collective performances, that they might not remember (Middlemas et al., 2018).

In addition to recognizing the importance and utility of match analysis (Palao & López-Martínez, 2012; Wright et al., 2012; Wright et al., 2013), past studies have considered the perceptions of coaches about this tool (Kraak, Magwa, & Terblanche, 2018; Painczyk, Hendricks, & Kraak, 2017). Coaches typically report that match analysis is a key tool for planning team training across the season and, consequently, for improving the athletes' performance during training (Butterwoth et al., 2012). Prior studies have also indicated that information extracted from match analysis influences the style and tactics of the game (Kraak et al., 2018; Martin, Swanton, Bradley & McGrath, 2018). That said, although the positive perceptions of coaches about the utility of match analysis are generally understood, it remains important to develop our understanding of the perceptions of another protagonist in the training process: the athletes.

At present, studies that have analyzed player's perceptions about the importance of match analysis for the training process are scarce. Of those published, at least one has indicated that match analysis is considered important for improving performance and enabling players to be more prepared for competition (Francis & Jones, 2014). Other studies have shown that players value game analysis positively and emphasize that the use of video is key to facilitate self-learning and reflection on the game (Wright, Carling, Lawlor & Collins, 2016).

It is both relevant and crucial to understand players' perceptions of these match analyses because the information transmitted pertains to their own performances. As such, this information can increase a player's awareness of his/her strengths and weaknesses and help them to better monitor their own performances, both individually and as part of a collective, as well as that of their rivals.

With the above review considered, the aim of the present study was to assess the perceptions of athletes from an elite women's volleyball team about the utility of an intervention program designed to regularly provide players with information about competitive performance. This information related to the players individually, to their team, and to opposition teams, and was conducted across the period of an entire season.

Method

Participants

The sample consisted of a women's volleyball team that competes at an elite level (N = 12). Players in this study team were aged between 18 and 32 years (M = 25.83, SD = 4.34). Players typically trained 5 days a week (9 hours per week on the court) and competed once a week (Saturdays).

Confidentiality and anonymity of data were guaranteed to participants throughout the process via the use of pseudonyms, and the study was conducted under the recommendations of the Declaration of Helsinki. Players signed an informed consent form prior to their participation. All participants were informed of their right to withdraw from the study at any time. The study was approved by the Ethics Committee for Human Research (Humanities) of Extremadura University.

Protocol for the match-analysis intervention program based on Constraint-led Approach (CLA).

The intervention program was based on the need to provide objective, contextualized, and systematic information to a high-level volleyball coach. This information was obtained from match analyses, and elaborated on specific game situations related to the study team and its rivals, as well as individualized tactical-technical information about the study team players (scout reports).

The assistant coach, who was also the principal investigator of the present study and a specialist in volleyball match analysis, implemented the intervention program. Specifically, the assistant coach prepared scout reports (relating to both the study team and opposition teams) and provided them to the coach over the period of a full season. Crucially, reports were constructed around the needs of the coach (Wright et al., 2013). The fact the principle investigator was specialist in match analysis, with experience as a volleyball coach and a member of the technical team guaranteed a relationship of trust with the team. Additionally, because it is important for the coach to establish a relationship of trust with the analyst (scouting), the conditions were optimal for applying the intervention program (Wright et al., 2013) and guaranteeing a high quality intervention.

The season lasted 6 months, and consisted of two rounds (first and second leg matches) of 3 months (12 weeks) each. During both rounds, two scout reports were

provided per week (one for the study team and another for an opposition team). These reports took into account the pedagogical principles of the Constraints Led Approach (CLA), an ecological model based on the principles of nonlinear pedagogy, which are centered on the mutual relationship that emerges from the interactions of the individual and the performance environment (Renshaw, Araújo, Button, Chow, Davids, & Moy, 2016; Tan et al., 2012). In the application of this model to collective sports there are a series of pedagogical principles that coaches must consider (Chown et al: 2015, Chow 2013, Davids et al., 2015). Of these, the following were considered in the development of the program: representative design, variability, individual differences and accountability (responsibility of the players to complete the task and reach the proposed objectives).

***** Insert figure 1 *****

The intervention program consisted of three phases:

1. *Diagnostic phase and match analysis (of the study team and opposition teams) according to the coach's needs.*

Each week, a match analysis tailored to the coach's needs was performed for (a) the study team, and (b) their opponent, via match analysis (data collected from a video recording of the matches from the back of the court to guarantee an optimal vision plane).

2. *Phase of elaboration and provision of information to the coach.*

Once obtained, information concerning the study team and their opposition (the nature of which depended on the needs of the coach) was collated in two scout reports:

one for the study team (delivered at the beginning of the week), and another for the opposition team (delivered in the middle of week).

The reports included only the most relevant data in order to facilitate reading and understanding by the coach (Hughes & Franks, 2004). Specifically, the study team's own reports focused on contextualized information about:

- Specific game situations encountered by the team across the different phases of the game that need to be corrected, improved or strengthened. In volleyball the two major phases, or complexes (Ks), of the game are complex I (K1) or side-out, which comprises serve-reception, setting and attack; and complex II (K2) or side-out transition, which comprises serve, block, low defense and counterattack (Costa, Afonso, Brant, & Mesquita, 2012; Palao, Santos, & Ureña, 2004).
- Individualized technical-tactical information for the players concerning negative aspects that should be corrected or improved, and positive aspects that required continued work (Jenkins et al., 2007; O´Donoghue, 2006).

Reports of the opposition team focused on contextualized information about:

- Aspects of the opposition team's game that would be useful to prepare for in future matches: understanding the strengths and weaknesses of an opponent helps to prepare the strategic work of the team (Middlemas et al., 2018).

3. Phase of providing information to players.

Once the coach had acquired the information, this was then transmitted to the players of the study team in the form of reports and video clips. This occurred in two meetings during the week: a post-match meeting and a pre-match meeting.

- The post-match meeting was held at the beginning of the week (Monday) to analyze the team's scout reports and to visualize the positive and negative aspects of the game.
- The pre-match meeting was held at the end of the week (Thursday) to analyze the scout reports of the opponent and visualize different game situations in the attack phase (K1) and defense phase (K2).

***** Insert figure 2 *****

Data collection and instrument

The authors used a semi-structure interview technique to collect data. This technique was applied to the twelve players of the study team at the end of the competition season. We specifically chose this moment so that the athletes could make a complete assessment of the intervention program. The interview was applied individually, rather than to the team as a whole, as the study aim was to understand the opinions of players independent of the influence of their peers. The interview consisted of the following questions: How do you rate the evaluation and analysis of your team via match analysis across the season? How do you rate the evaluation and analysis of your opponents via match analysis across the season?

Interviews were recorded using a digital recorder (Olympus VN-712PC) and transcribed verbatim to ensure an accurate and complete record of the data. During the interviews, the principle investigator acted as an active listener (by having a neutral attitude, hiding their opinions, and fostering a relaxed atmosphere) in order to encourage players to transmit their thoughts through their own words (Smith & Sparkes, 2005).

Trustworthiness

The authors took several steps to improve the credibility of the study (Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001): 1) To guarantee an optimal level of competence, the interviewer (principal investigator) completed a period of training supervised by a researcher with experience in semi-structured interviews and in qualitative analysis (Lincoln & Guba, 1985; Patton, 1990); 2) A group of three experts in volleyball (each with a level III coaching qualification and experience in this function) and in qualitative methodology collaborated for the interpretative analysis and participated in regular meetings to establish the category system (Cote & Salmela, 1996; Meyer & Wenger, 1998). This process was important to guarantee the reliability of the data as it ensured interpretive validity and minimized the risk of biases in individual researchers (Silverman, 2000).

Data Analysis

The authors conducted a thematic analysis to extract data from the interviews. To achieve this, categorization and coding were conducted using the procedure suggested by Charmaz (2014). Specifically, in the first phase of analysis the authors conducted a repeated reading of the transcripts, followed by an open data coding in which the researcher dissected, fragmented, and segmented the data contained in the text with the aim of listing a series of emerging categories and subcategories. This phase allowed the researcher to code the data in terms of as many categories and subcategories as emerged, although when appropriate, new emerging categories and subcategories were adjusted to align with those that already existed. The second phase involved *axial coding,* and involved filtering the categories and subcategories that had emerged in the previous phase (see Figure 3).

The information was then reorganized to create new relationships between the concepts (Charmaz, 2006, 2014). Specifically, the authors selected the most interesting of the categories and subcategories that emerged in the first phase of open coding (guided by specialists in volleyball and qualitative research). To add depth to these categories they were enriched with relevant quotes and passages from the text. The next phase was based on *selective coding*, where the researcher selected the two main dimensions (assessment of analyses related to the study team vs. opposition teams) and then related all the other categories and subcategories with them (Charmaz, 2006, 2014). Once the data were analyzed, a review of the existing literature was carried out to contextualize the results (Holt & Dunn, 2004; Strauss & Corbin, 1998). Finally, for the final phase of analysis the authors sought to refine the ideas and specific relationships between categories through the production of a report during the study and preparation of the manuscript.

***** Insert figure 2 *****

Results

In the following section, the results from the analysis of interviews are presented according to the categories presented in Figure 3:

Assessment of match analyses related to study team

Our results showed that 95.65% of the comments made by players concerning the provision of objective information from match analyses about their own team were positive. Only 4.35% of comments were negative. Indeed, all the players indicated some positive aspect in this regard.

***** Insert table 1 *****

Among the positive aspects, the subcategory that all players highlighted was that the provision of information informed them about the negative aspects of the game that required correction (52.17%).

> *For me great, because when you see the video, there at that moment, it shows you what you failed and what you can improve, I see that this is fundamental (Player 6).*

In addition, one of the subcategories indicated by half of the players was that the provision of information helped them be aware of the positive aspects of the game, and that this was a motivation in weekly training (26.08%).

> *... the theme of the positive and negative points of Saturday's match, I think it's very good because that's how you see what you do well and what you do wrong, and if you do it badly we improve it and what you do well, a little for motivation (Player 2).*

Other less frequent comments were that the match analyses helped players feel important and valued (4.35%), informed them about the evolution of their performance (4.35%), and helped them approach future matches with more solvency (4.35%).

> *When you see the video of the positive aspects ... you can say I didn't score but I helped the team with the defense or the reception, this I think is good for everybody because we feel important in something, so maybe in this match I didn't help score but I did help in other aspects of the game (Player 6).*

> *I think it's very positive because sometimes things do not work and you can see what the specific error was ... if in this game we missed the serve, maybe these two weeks we will train serves more and you see an evolution of the serve, and this is very good, because if we miss 15 serves and in the next match we miss 7, there is an evolution and you can see it in the statistics (Player 1)*

> *We saw the mistakes and successes of the team and I think that it has been positive and I think it has helped us to approach the matches with more solvency (Player 12)*

Moreover, the players also indicated that the provision of data from match analyses helped them to compare their personal feelings about their game performance with objective data (4.35%).

> …a lot of the time we don't realize ... I sometimes leave with the feeling that I had a good match and when you see the data, then you say ... I was shit ... for me it was one of the best things (Player 6).

Finally, one of the players noted a negative aspect of the program: it may not be good to be reminded of a poor performance (4.35%).

> *On the one hand, I think it's positive because we realize the mistakes, but maybe if you had a bad match, it's not good that you remember it again that day (Player 11).*

Assessment of match analyses related to opposition teams

The results showed that 100% of the comments made by players concerning the provision of objective information about opposition teams were positive.

***** Insert table 2 *****

Particularly, the most evident aspect, referred to by nine of the players, was that the program helped inform them about their opposition team's game (45%).

> *The reports and the sheet with the analysis about the opposition team is very good to see during the meeting and to remember later, I think this is very good to know and have the opposing team in mind (Player 2)*

The second most frequent aspect indicated by the players was that the match analyses related to opposition teams helped them be more prepared for upcoming matches (20%).

> *We went to the matches much more prepared and knowing what we had ahead ... we had a lot of information to guide us from videos, statistics, conversations ... (Player 7).*

Other positive aspects highlighted by the players were that it helped them to set the weeks work (10%) and to better understand the strategic plan developed against the opponent for the next matches (10%).

> *Now with the analysis of the opposition teams, I think that it is much better and that way you can plan the week according to the team we are going to face (Player 3)*

In this issue we have improved a lot and I think that the girls have already begun to better understand the tactics of the game, you know? Now we see a match and we know what we have to look for in the game of the other teams… (Player 7)

Finally, although referred to less frequently, some of the more veteran and experienced players indicated that it helped them to be more focused and motivated in training (5%).

... it seems that you are more focused, because after I leave the video, I leave with more desire to train because I have seen how they play and I want to be in top form (Player 6)

In addition, players indicated that the match analyses related to their rival teams helped involve the team in the development of strategic plans (5%), and improved concentration (5%), during matches.

We have changed this a lot and super well, ... now we are playing against a team and we are always talking to each other about the tactics that the technical team has, we are always remembering during the match ... the information and the preparation of the match for me was super good ... (Player 7)

... personally, knowing the opposition team always makes me a lot, I am a player who thinks a lot, I have to be always focused and thinking to play. In addition, some players, following the match reports, began to think more (Player 7)

Discussion

The objective of the present study was to assess the perceptions of athletes from an elite women's volleyball team about the utility of an intervention program that was designed to regularly provide players with information about competitive performance. This information related to the players individually, to their team, and to opposition teams, and was conducted across the period of an entire season.

The results indicate that the athletes' perceptions were generally positive concerning match analyses related to the study team. Indeed, all players of the team reported at least one positive aspect. Several studies aimed at investigating the evaluation of match analysis by coaches of different sports have also identified positive perceptions: match analysis was considered useful because in helped coaches analyze

the performance of their teams (Kraak et al., 2018; Martin et al., 2018; Painczyk et al., 2017; Sarmento et al., 2015; Wright et al., 2012; Wright et al., 2013). Evidence therefore appears to indicate that match analysis can be a useful tool for both technicians and athletes.

The most commonly highlighted positive aspect about match analysis related to the team was that it helps players understand the negative aspects of their game (so that they might correct them). This was followed by the fact that match analysis helped players understand the positive aspects of their game, which served as motivation. Additionally, the players indicated that understanding their game helped them feel important and valued in the team. Although few studies have directly assessed athletes' perceptions of the utility of match analysis (Bampouras et al., 2012), some prior work has revealed the importance given by players to match analysis for informing them of the aspects of the game that require development (Francis & Jones, 2014). Other studies have highlighted the importance given by athletes to the analysis of their game via video because of the need to analyze and reflect on performance (Wright et al., 2016). Coaches have also reported that match analysis of their team is important because it provides continuous feedback to the team and players (Silva, Castelo, & Santos, 2011). Consistent with what was reported by the players of the present study, such feedback helps to identify the team's weaknesses so that players can correct them (Jenkins et al., 2007; O´Donoghue, 2006; Silva et al., 2011). Moreover, these evaluations or performance controls should not focus uniquely on analyzing athletes' errors, but must also consider team strengths (Silva et al., 2011).

Another issue highlighted by our study players was that the information about their performances helped them to acquire an understanding of how their game was evolving over time, and how to approach upcoming games with more solvency. This

finding aligns with those of other studies that have shown match analysis carried out over time provides a perspective of athletes' game evolution (Hughes & Bartlett, 2002) and enables coaches to monitor athletes' performances across the season via the use of statistics (Gesbert et al., 2016; Middlemas et al., 2018; Palao & Hernández- Hernández, 2014). Our results demonstrate that players valued having access to objective data concerning their performances, and indicate that this helps them to understand how they are developing and improving over time, which ultimately helps them face approaching matches with more solvency (Francis & Jones, 2014).

The study players also reported that the match analyses helped them corroborate their personal feelings about their performances with objective data. Accordingly, several authors have highlighted the importance of conducting objective analyses of games so that athletes can obtain feedback on aspects they may not remember, and thus gain a more objective view of performance during competition (Fernández-Echeverría et al., 2017).

Not all comments made by the study players were positive. One comment, related to match analyses of the team as a whole, was that the provision of information might be harmful if it serves to remind players about mistakes after a bad game. This finding aligns with a number of studies that have indicated the need to present both positive and negative aspects of the game with an 'improvement and progression' approach (O´Donoghue, 2006). Our findings therefore suggest that coaches should carefully manage how they present information to players in order to reduce the chance of it being perceived in a negative or harmful way.

The present study further indicated that all team members evaluated the match analyses related to opposition teams positively. One particular positive aspect was that

these match analyses helped players to understand their opposition team's game, and thus to be better prepared for future matches. This result corroborates those of Mesquita & Graça (2002) in which an elite volleyball setter, who was interviewed using video, stressed the importance of considering the opposition team's style of play and their strengths and weakness when making decisions. This finding indicated that the setter had a high knowledge of the game, an ability to prioritize the relevant events according to the circumstances in the moment of the game, and an elevated capacity to identify relevant signals and make decisions according to the opposition team's performance.

The analysis of an opponent allows a team to better understand their opposition team's strengths and weaknesses before facing them (Fernández-Echeverría et al., 2017). Accordingly, several studies have shown that coaches often perform analyses of opposition teams as a means to develop specific training tasks that simulate the expected game style of an opponent. Such training tasks then help players to be more prepared for upcoming matches (Sarmento et al., 2015; Silva et al., 2011). Moreover, studies have shown that players perceive a benefit to having knowledge about their rivals as it allow them to be more prepared for the competition and thus have greater chances of victory (e.g. Francis & Jones, 2014).

Other, less commonly reported positive aspects of the match analyses related to the opponent were that it helped players to plan the week and to better understand the strategic plans required against the opposition teams. In a similar vein, objective knowledge about an opponent's game obtained from scout reports allows players to understand their opposition teams' strategic plans (Sarmiento et al., 2015) and thus helps them to improve their overall tactical knowledge of the game (Francis, & Jones, 2014). Future studies should focus on understanding how information about an

450 opposition team's competitive performance can help improve the tactical game of
451 individual players within a team.

452 Another finding of the present study was that the players felt more able to be
453 focused and motivated in training when they were aware of their opposition team's
454 game. This result is consistent with prior studies that have shown players have greater
455 concentration and cognitive involvement when training considers real-world aspects of
456 play (such as the specific characteristics of an opposition team) (Davids, Button &
457 Bennett, 2008). Tasks that simulate real-world situations of play have also been shown
458 to encourage interest in athletes because they offer a sense of reality, novelty and
459 challenge. Interest, in turn, has been shown to increase motivation and instant
460 enjoyment (Chen & Darst, 2001).

461 Finally, our study shows that in addition to having benefits for training,
462 understanding an opposition team's game benefits players during matches. Specifically,
463 players reported feeling more involved in the development of the strategic plan, as well
464 as being generally more focused. This highlights that prior knowledge of an opposition
465 team's fundamental technical-tactical characteristics and strategic plan helps a team
466 establish specific objectives to be met during the competition (Sarmento et al., 2015).
467 Furthermore, if the players are clear about which aspects of their opposition team's
468 game they should attend to, and are able to relate these to their own needs, this can lead
469 to an increase in focus and motivation (Francis, & Jones, 2014).

470 In sum, the present study demonstrates that players' perceptions of an intervention
471 program, intended to promote the provision of information about their (and their rivals')
472 competitive performances across a single season of competition, were predominantly
473 positive.

It is important to note that the intervention program applied in this study included presenting players with video clips of their team's performances, as well as those of opposition teams. This was found to be important for players as it served to bolster the information provided in written reports. Specifically, it allowed players to visualize the performance of successful and erroneous game actions, as well as to observe their opponents' games. In future studies the systematic use of similar video feedback may be useful (Vickers, 2007) for allowing players to observe their tactical behavior (in training and competition), to identify opposition team's strengths and weaknesses, and to improve the recognition of contextual factors (Groom et al., 2011; Nelson, Potrac, & Groom, 2011; O'Donoghue, 2010). In support of this, prior studies of elite women's volleyball have demonstrated the effectiveness of video feedback and questioning to improve tactical behaviors related to setting (Moreno, Moreno, Ureña, Iglesias, & Del Villar, 2008), and tactical knowledge related to attack (Moreno, Moreno, García-González, Ureña, Hernández, & Del Villar, 2016).

Practical applications

The results of the present study show the athletes' positive assessment on the evaluation and analysis of both the own and the opponent teams, through match analysis, during the competition season. Therefore, we recommend teams and coaches the use of match analysis in the training process to provide athletes detailed and individualised feedback. This feedback should be presented through reports and video clips, in a simple and understandable way. In turn, it is essential that the results of the match analysis are objectively interpreted and are adjusted to the needs of the team, in order to use them to optimise the planning of sports training.

Conclusions

The findings of the present study indicate that players of an elite level volleyball team viewed the provision of objective information related to their (and their rivals') competitive performances positively. In particular, players reported that the acquisition of this information helped them to correct their mistakes, motivate themselves, feel important, understand their development, be better prepared for future encounters with opposition teams, and corroborate their own opinions about their performances with objective data. The only negative reported was that the intervention program could have a negative effect on players if it served to remind them of mistakes made after a bad game. Objective data about their opposition team's games helped players to better understand their opposition teams, prepare for upcoming matches, plan the weeks training, be more focused and motivated during this training, and to be more involved in the development of strategic planning and more focused during competitive matches.

The importance of match analysis should be further explored in future studies, not only via athletes' perceptions, but also by assessing changes observed in the training process or even in the competitive performance of athletes. A limitation of the current study is the lack of specific questions related to the specific characteristics of the intervention program applied.

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Disclosure statement

No potential conflict of interest was reported by the authors

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<table>
<tr><th colspan="4">Chronogram</th></tr>
<tr><td>Pre-Season</td><td colspan="2">Season</td><td rowspan="2">End of Season</td></tr>
<tr><td></td><td>First Round</td><td>Second round</td></tr>
<tr><td>1 Month</td><td>3 Months (12 weeks)</td><td>3 Months (12 weeks)</td><td rowspan="2">Player’s perceptions of the protocol for the match analysis intervention program</td></tr>
<tr><td></td><td colspan="2">Protocol for the match analysis intervention program</td></tr>
</table>

668 Figure 1. Study chronogram

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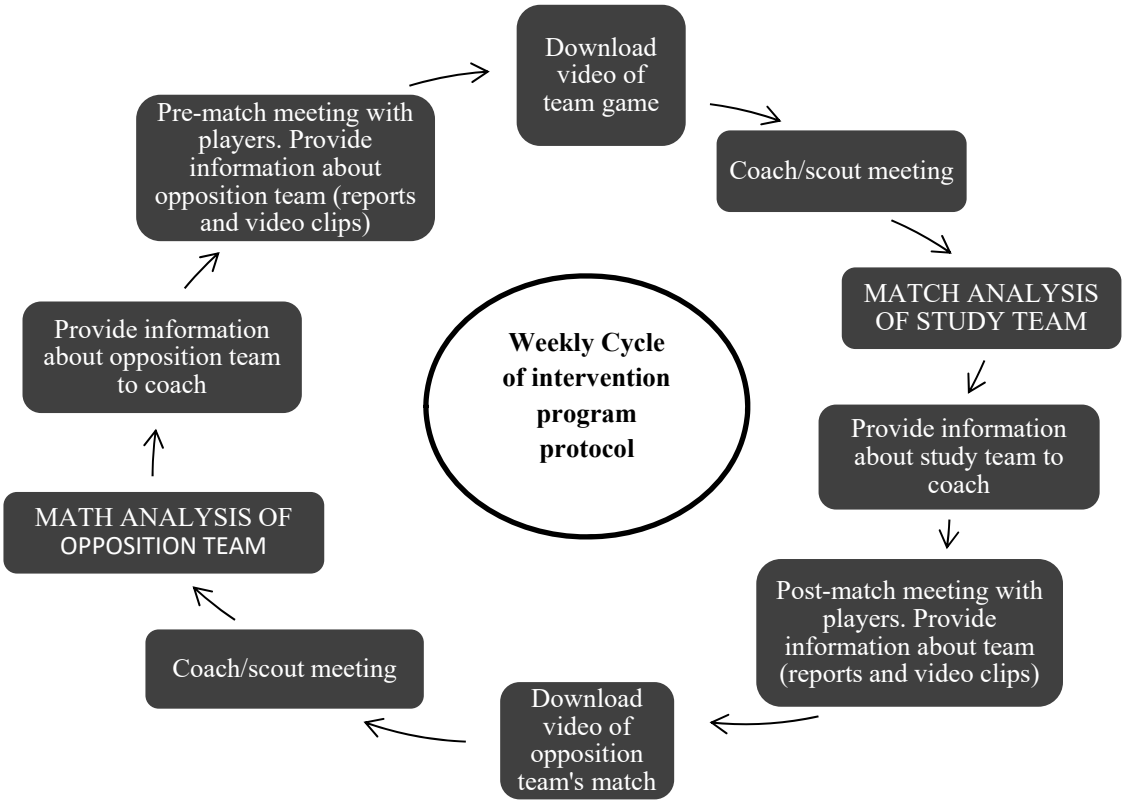

Figure 2. Weekly cycle of intervention program protocol.

Dimensions	Categories	Subcategories
Assessment of match analyses related to study team	Positive	Helps inform about the negative aspects of the game that need correction
		Helps inform about the positive aspects of the game that serve as motivation for weekly training.
		Helps players to feel important and valued in the team
		Helps inform players about the evolution of their performances
		Helps players approach upcoming matches with more solvency
		Helps compare the personal feelings of the players about their performances with objective data
	Negative	It can be painful to be reminded of mistakes made after a bad game.
Assessment of match analyses related to opposition teams	Positive	Helps inform about opposition team's game
		Helps players be more prepared for upcoming matches
		Helps to determine the weeks training
		Helps players to focus and be more motivated in training
		Helps players to better understand the strategic plan developed during matches
		Helps involve the team in the development of the strategic plan during matches
		Helps players to concentrate more during matches
	Negative	NA

Figure 3. System of categories and subcategories used for data analyses.

716 Table 1. Descriptive analysis of the assessment of match analyses on the study team

Categories	Subcategories	Frequency	Percentage	Players
Positive		22	95.65%	Players 1/2/3/4/5/6/7/8/9 /10/11/12
	Helps inform about the negative aspects of the game that need correction	12	52.17%	Players 1/2/3/4/5/6/7/8/9 /10/11/12
	Helps inform about the positive aspects of the game that serve as motivation for weekly training.	6	26.08%	Players 2/4/5/6/7/10/
	Helps players to feel important and valued in the team	1	4.35%	Player 6
	Helps inform players about the evolution of their performances	1	4.35%	Player 1
	Helps players approach upcoming matches with more solvency	1	4.35%	Player 12
	Helps compare the personal feelings of the players about their performances with objective data	1	4.35%	Player 6
Negative		1	4.35%	Player 11
	It can be painful to be reminded of mistakes made after a bad game.	1	4.35%	Player 11
Total		23	100	

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725 Table 2. Assessment of match analyses related to opposition teams.

Categories	Subcategories	Frequency	Percentage	Players
Positive		20	100%	Players 1/2/3/4/5/6/7/8/9/10/11/12
	Helps inform about opposition team's game	9	45%	Players 2/4/5/6/7/8/10/11/12
	Helps players be more prepared for upcoming matches	4	20%	Players 5/6/7/10
	Helps to determine the weeks training	2	10%	Players 3/6
	Helps players to focus and be more motivated in training	1	5%	Player 6
	Helps players to better understand the strategic plans during matches	2	10%	Players 6/7
	Helps involve the team in the development of strategic plans during matches	1	5%	Player 7
	Helps players to concentrate more during matches	1	5%	Player 7
Negative		0	0%	
Total		20	100%	

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