



SOCIAL SCIENCES

Handball in school: teaching of defensive contents

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Abstract: This study aimed to identify the defensive contents and teaching approaches preferred by handball coaches of school teams. Eleven coaches from a city in the State of São Paulo were interviewed. The discourses from the semi-structured interviews were analyzed based on the Collective Subject Discourse method. Coaches revealed that match-up, base position, coverage, and spatial occupation are the main individual defensive contents and use the teaching through games situations, technique approach, and teaching through games. The main group defensive content mentioned by the coaches is the match-up changes, mutual cover, and defensive systems, for which they preferred the teaching through games situations, teaching through games and technique approach. The findings show that although they are content of the same phase of the game, there is a preference for different teaching approaches. On the other hand, there seems to be inconsistency with the choice of the technique approach when it comes to the teaching of individual defensive contents, mainly because they are related to the players' decision-making. Such findings will contribute to the teaching of handball in school teams and with reflections for the teaching of the different specific contents, raising new discussions.

Key words: Defense, handball, school teams, sport pedagogy, youth sports.

INTRODUCTION

The teaching of handball in a long-term overview has been explored by different authors who describe the specific content and pedagogical procedures in each team, drawing on their experiences and the characteristics of certain countries/contexts (Antón García 1990, Ehret et al. 2002, Greco et al. 2012, Menezes 2018).

The long-term teaching proposals presented by the aforementioned authors help to understand the guidelines adopted in different countries to increase knowledge about the game, through organizational and methodological restructurings, such as Spain (Antón García 1990), Germany (Ehret et al. 2002), and Romania (Bota & Pereira 2003).

Some advantages presented by these are the description of aspects to be addressed in each team (such as technical and tactical aspects), support for the elaboration of pedagogical planning for the teaching of handball in a long-term overview, whose learning takes place gradually (from handball initiation to adult team) and is based on pedagogical procedures to address the inherent content of each stage.

On the other hand, such proposals do not consider the specificities of the different contexts in which teaching can take place (such as school) and have little relation to the perspectives of coaches. Estriga & Moreira (2015) reported that the teaching of handball in school has gained a specific place in the Physical Education curriculum in Portugal, although it

has been marginalized by teachers/coaches due to space problems for the game and the lack of teaching approaches for the school environment.

In the Brazilian context, the proposals of the authors mentioned above can be used as references for the progression of the specific contents, but without necessarily having correspondences between the proposed elements and those that are really possible to be taught at the suggested ages. In this sense, Menezes et al. (2015a) highlighted the need for studies that emphasize the specific contents (offensive and/or defensive) of handball to subsidize the planning of the teaching-learning process considering the specificities of the Brazilian context.

Therefore, in the Brazilian context, the discussion of themes relevant to the teaching of handball, especially concerning tactical aspects, defensive systems, and pedagogical procedures in different categories, has a prominent position by different authors (Greco et al. 2012, Krahenbühl & Leonardo 2018, Menezes et al. 2011, 2015a, 2016). These studies have focused on the identification of the characteristics of the offensive and defensive phases of the handball game, both concerning the content addressed and the teaching approaches adopted by the coaches.

In a systematic review of teaching handball in school physical education classes, Krahenbühl et al. (2018) found eight articles over a period of 10 years. The articles found address, mainly, the analysis of teaching approaches, the performance of motor skills, and the technical-tactical knowledge of students. This study shows a lack of academic production on the teaching of handball in the School Physical Education classes. Systematic reviews such as those of Prieto et al. (2015) and Modolo et al. (2018) show that there is a tendency in investigations

involving male, adult, and high-performance teams, to the detriment of other teams and competitive levels.

Still in this scenario, different authors investigated formative processes in handball with players/teams/coaches outside the context of the School Physical Education. Although such studies that emphasize the Brazilian context involve U-12 (Menezes 2012, Menezes et al. 2011, 2016, 2017a), U-14 (Krahenbühl & Leonardo 2018, Leonardo & Krahenbühl 2018, Menezes 2012, Menezes et al. 2015a, b, Ricci et al. 2011), U-16 (Menezes et al. 2015a, 2018, Menezes 2010) and U-18 (Menezes et al. 2015a, 2018) composed of players at school ages, these refer specifically to city teams (maintained by city halls) and/or clubs.

Considering specifically the teaching of the individual defensive system in the U-12 and U-14 teams, Krahenbühl and Leonardo (2018) pointed out that such a choice occurs, among other reasons, due to the adaptations in the rules in these age groups that prioritize the players' development. For these authors, some tactical defensive content can be developed by the player through the individual defensive system, as well as the players' understanding and perception of the game.

Menezes et al. (2015a) analyzed aspects related to the development of tactical strategies and game systems in the U-14, U-16, and U-18 teams. The authors emphasized the need to develop individual tactical strategies gradually and especially considering the game context, prioritizing teaching through game situations (situational approach).

Based on the presented scenario, the aim of this study was to identify the defensive contents and teaching approaches adopted by a group of handball coaches of school teams.

MATERIALS AND METHODS

Research design

The qualitative approach was chosen because of the possibility of analyzing the inherent aspects of the coaches' knowledge in a given context (Flick 2009), as well as assigning meaning to a certain phenomenon based on their perception (Triviños 1987).

This approach is based on the descriptive nature of the data on the context in which the participants express their knowledge, valuing the diversity of the participants perspectives and the researcher's reflexivity (Flick 2009) from the representation of the coaches' opinions on the subject investigated without comparing groups or predict behavior (Ato et al. 2013).

In qualitative research, the relationship between the researcher and the participant constitutes one of the main "instruments" of production and descriptive analysis of the data, which express the complexity of human behavior (Flick 2009, Marconi & Lakatos 2011, Thomas et al. 2012). Access to human thought is an important argument for the essence of qualitative research (Lefèvre & Lefèvre 2003), which is concerned with a reality full of meanings, beliefs, and values, and cannot be simply quantified (Marconi & Lakatos 2011) or revealed by bibliographic research and/or observational (Boni & Quaresma 2005).

Participants and ethical aspects

The following inclusion criteria were determined for participation in this study: a) be a coach of school teams of a city of the State of São Paulo; b) to be a coach of the U-14 and/or U-17 teams in the year of this study; c) participate in competitions at municipal level (specific league of handball or other competitions), regional or state (State School Games) with their teams. Of the 14 coaches who met the criteria, 11 (referred to as S1 to S11) agreed to participate in this study.

This was submitted and approved by the Research Ethics Committee of Faculty of Philosophy, Science and Letters at Ribeirão Preto of USP (CAAE: 32063614.3.0000.5407), in that it involved sports coaches. All coaches interviewed signed a Free and Informed Consent Form agreeing to the participation, ensuring the confidentiality of their personal information and the disclosure of the data exclusively for academic purposes. The contact with the coaches was carried out via telephone and/or social networks, to explain the importance of their contributions. Table I shows the characterization of the coaches.

The average age of the interviewed coaches was 43.0 (± 10.8) years (min=27, max=59), graduates there was a mean of 19.5 (± 12.1) years (min=1, max=38) and with an average time of experience as a handball coach of school teams of 12.5 (± 7.7) years (min=4, max=27). It was initially identified the heterogeneity of the coaching group based on their professional experiences and academic background. All of the interviewees

Table I. Characterization of school team coaches.

Coach	Age	Undergraduate in Physical Education (years)	Experience as a handball coach (years)
S1	38	1	7
S2	52	27	27
S3	27	6	8
S4	27	6	6
S5	48	28	9
S6	59	40	20
S7	52	28	5
S8	32	9	4
S9	51	29	14
S10	44	21	22
S11	43	21	15

were graduates of Physical Education, eight had completed courses of continued education (*lato sensu* - S1, S3, S5, S6, S7, S9, S10, S11) and one had a course of this nature in progress (S8).

Instrument and procedures for interviews

A semi-structured interview script was developed, based on questions corresponding to the hypotheses interesting to the study, and for offering possibilities for other questions while the interviewee develops his reasoning on the topic addressed (Marconi & Lakatos 2011). The semi-structured interview seeks to reveal dynamic game processes and provide the analysis of the interaction of certain variables, specifically in this study the identification of technical-tactical parameters of the handball game and its teaching.

This interview script is part of a larger research project involving the teaching of handball in school, and was divided into two blocks: a) the first one related to personal information and academic training; b) the second one was about the defensive contents considered more important by the coaches and the teaching methods used by them.

The first block aimed at identifying the personal information of the coaches and to feel comfortable in the presence of a tape recorder (Triviños 1987). The second block had guiding questions: "What do you think your players should know individually to make the defense effective?"; "What do you think your players should know how to do collectively so that the defense is effective?"; "How do you teach these contents?". While the coaches approached these themes new questions were asked to deepen in these aspects, which is a prerogative of the semi-structured interview.

For the interviews, the following procedures were adopted, in chronological order: 1) first contact with the coach via telephone and/or

social network to present the research and invite participation; 2) scheduling the interview; 3) interview, with the full recording; 4) transcription verbatim of the interview, started on the same day of the interview.

For the interviews were selected places without noise, and that did not compete with the professional activities of the coaches, for exclusive attention to the interviewee-interviewer relationship. The transcript was started the same day of the interview because the discourse is still latent to the researcher (Oliver et al. 2005). As a form of validation of the speeches, the transcripts were sent to the coaches to ensure their reliability.

Speeches analysis

Speeches were organized, tabulated, and analyzed using the Collective Subject Discourse (CSD) method, which enabled the identification and reconstruction of similar ideas from a set of individual discourses on a given theme (Lefèvre & Lefèvre 2012). The CSD is based on discursive questions to identify information about the thoughts and opinions of a given theme (Lefèvre & Lefèvre 2003).

It is possible to preserve and express the discourse of a community/collectivity from the aggregation of excerpts from the individual discourses, in which the coherence and the constitution of each part that compose it are preserved (Lefèvre & Lefèvre 2003). This method is based on the Theory of Social Representations (by Serge Moscovici) and is "fundamentally concerned with the interrelationship between subject and object and how the process of constructing knowledge, both individual and collective" (Crusoé 2004, p. 106).

The CSD may reveal different thoughts of participants on the same topic. However, it is possible to identify and reconstruct similar ideas from a set of individual discourses, where

each CSD aggregates different arguments about a given opinion.

Three methodological figures constitute important processes for the CSD method (Lefèvre & Lefèvre 2003, 2012): a) key expressions (KE - continuous and/or discontinuous literal excerpts of speech that reveal its essence); b) central ideas (CI - a reliable and succinct description of a given discourse on a thematic, giving meaning to each set of KE); and c) the Collective Subject Discourse (CSD - written in the first person from the aggregation of a set of KE belonging to the same CI).

From the possible groupings and reconstructions of speeches, it is possible to express the collective discourse, not reducing them to a category (Lefèvre & Lefèvre 2012). A consensual agreement was made by two researchers from the study group to which the researcher belongs to control quality (Anguera & Mendo 2013, Wright et al. 2016), in the identification of CI and KE, as well as in the elaboration of CSD.

In the “Results” section will be presented the CSD corresponding to each CI, with an overwritten indication of the coaches who mentioned each speech.

RESULTS

After tabulation of the speeches it was possible to identify the main defensive content taught by handball coaches of school teams and the teaching methods used by them.

On the content taught by the coaches, the discourses grouped the opinions on the U-14 and U-17 teams, because in some schools the teams are constituted by the same players. Therefore, the CSD for the individual defensive contents are shown below and described in Table II:

- CSD1 - from CI-1: “Good understanding and execution of technique and tactical elements” (shared by all coaches);
- CSD2 - related to CI-2: “Notion of spatial occupation and displacements” (shared by 10 coaches).

Four CSD were elaborated on the collective defensive contents, presented in Table III, thus identified:

- CSD3 - from CI-3: “Tactical elements” (shared by seven coaches);
- CSD4 - related to CI-4: “Defensive systems” (shared by five coaches).

As presented in Tables II and III, when the theme involved the teaching of defensive content, the CSD grouped the U-14 and U-17 teams, being divided according to the contents (individual or collective).

Considering the teaching of the individual defensive contents it was possible to elaborate three CSD (shown in Table IV), thus identified:

- CSD5 - from CI-5: “Teaching through game situations” (shared by nine coaches);
- CSD6 - related to CI-6: “Technique approach” (shared by five coaches);
- CSD7 - from CI-7: “Teaching through games” (shared by three coaches).

The teaching of collective defensive content was also organized in three CSD (presented in Table V), and thus identified:

- CSD8 - from CI-8: “Teaching through game situations” (shared by eight coaches);
- CSD9 - related to CI-9: “Teaching through games” (shared by five coaches);
- CSD10 - related to CI-10: “Technique approach” (shared by two coaches).

Table II. CSD of the individual defensive contents considered most important by the coaches in the U-14 and U-17 teams.**CI-1: Good understanding and execution of technique and tactical elements (all coaches)**

CSD1: In the U-14 and U-17 teams they already have more charge of stealing the ball, but already teaching that they can hold on defense^{S1,S3,S5,S9}. In addition to covering the spaces to prevent the opponent's pass, you also need to be aware of intercepting pass^{S7}. Let's think about three principles: to attack to steal the ball; only to disrupt the opponent, who gives the notion of coverage and a little more pressure because he is learning the individual defense; and about the goal defended^{S11}. I teach the boys to leave^{S8}, the notion of who their markers are^{S4,S5}, know the time to contact^{S7,S8}, to make good marking on different defensive systems^{S5,S9}. I teach to look at the opponent's waist, which shows which way he goes^{S6}. In the U-14 team, the main point is to have a notion of the space of the court^{S3,S5} so that, even if there is no coverage, know how to find someone to mark^{S3}; know where it is and the other marker is and the function of each^{S5}. In the U-17 team I charge more speed^{S1,S9}, and more contact^{S2,S9,S10}, with a little more power; cannot let pass easy, and if passed easily is because it did not make the mark correctly^{S1}. The position of the arm and leg is fundamental^{S5}; have to be fast and effective to reach the ball before^{S9}; already begins to correct the displacements^{S6}. You have to start getting the notion of what is the coverage^{S2,S3,S4,S8}, because who is behind^{S3,S4}, and on the sides needs to help^{S8}.

CI-2: Notion of spatial occupation and displacements (S1, S2, S3, S4, S5, S6, S7, S9, S10, S11)

CSD2: In U-14 and U-17 teams, they need attention^{S1}, the notion of the court spaces^{S1,S2,S3,S5,S7}, behind them is the goal that has to be protected^{S2} and to centralize the marking to make the game more difficult for the opponent by the center of the court^{S4,S10}, lead the opponent to the wings^{S7,S10,S11}, to a more difficult position, play along with goalkeeper^{S10,S11}. Know how to move^{S2} and from the moment you start to gain spaces on the court, start stealing the ball and take possession of it, limiting the opponent's space mainly from the middle of the court^{S4}. If the defender conquers his space, he is already doing a great benefit for the collective^{S2}; in a zonal defense system, individual performance is essential^{S10}. I introduce the individual defense basically with space occupancy because they often start positioning related to the goalkeeper, with the opponent striker, with the target, and the interception to steal the ball. In the U-14 team, they must have the ball as a goal, to have an idea of the time of the ball to be able to anticipate and steal it^{S3,S10,S11}. In the U-17 team, I emphasize the positioning and the displacement, mainly because they have already learned the positioning in the U-14 team^{S6}. From then on I work very hard to close the pass line between the attackers, to intercept, to pay attention to the opponent's pass^{S7} and the marking changes that we will teach in 3:3 and then in 6:0^{S10}. If the attacking player has hit the ball, held, and is away from the goal, he does not need to approach him but needs to cover the pass that he will do^{S3}.

Table III. CSD referring to the collective defensive contents considered more important by the coaches in the U-14 and U-17 teams.**CI-3: Tactical elements (S1, S2, S3, S5, S7, S8, S11)**

CSD3: For me it is basically displacement^{S2}, fluctuation^{S1,S2,S8}, anticipation^{S7,S8}, coverage^{S3,S8}, two defenders against one attacker^{S2}, marking^{S1,S2,S5,S7,S11} and marking exchange^{S1}. Everyone has to follow the ball together, because they have mania to leave, leaving a large space and the pivot^{S8}. Since the U-14 have a notion of passing interception, close the pass line^{S7}. You have to know how to make the right contact, without knocking over, without hurting^{S7}. You have to create awareness of helping the teammate all the time^{S2}, have a notion of coverage in the U-17 team^{S3}. They have to be aware if they are going to score the space or the opponent, who is the direct marker of them, who is not, the function if someone is left without marking^{S5}.

CI-4: Defensive systems (S1, S2, S4, S6, S10)

CSD4: The defensive system in the U-14 is individual, and they already have to know who will be their marker^{S6}. At the school level here in the city all the schools know each other, know how to play and already have a game that starts with the individual marking on someone [combined defense]^{S4}. Depending on the team it will start 3:3; in the U-17 it is difficult for me to use an individual defense^{S4}. You need to explain all the defensive systems better and put that into game^{S1}. In U-17 communication is more important^{S1,S10}, to understand the importance of teammate^{S10}. As usually everyone works with 6:0, or at most 5:1, the pairing will come from the conversation^{S1,S2}, change the player's marking when entering the second pivot^{S10}.

Table IV. CSD referring to the teaching of individual defensive content in U-14 and U-17 teams.

CI-5: Teaching through game situations (S1, S3, S4, S5, S6, S7, S8, S10, S11) CSD5: In the U-14 and in the U-17, I use the situational approach^{S1,S4,S5,S7,S8,S10,S11}, 1x1^{S4,S6,S10}, 2x1, 2x2, 3x2^{S3,S4,S5,S6}, 3x3^{S8,S11}, 3x4^{S1,S8}, 4x3^{S8}, 4x4, until it reaches 6x6^{S7,S11}; sometimes also 1x1 work, in counter-attack situation^{S6}. I often put them in the half court^{S7,S11}, then one team attacks and another defends^{S7}. There is a moment that I put scores: the team that is defending got possession of the ball is a point; the team that is attacking made a goal is also a point; they understand that good defense is important and worth a good attack^{S7}.
CI-6: Technique approach (S1, S3, S5, S6, S9) CSD6: In U-14 and U-17^{S1,S5,S6} begins with the analytic^{S1}, series of exercises^{S9}; I do the technical exercises with the physical fitness: lateral displacement, mark and return; they do this without opposition, only the movement itself and sometimes they make "shadow", to have a notion of time^{S5}. In the U-14 is more the work of positioning, so that in the U-17 we can correct and orient^{S6}. I also work with game situations (2x1, 3x2, 4x3...), but after starting with the technique approach to they understand the technical gesture in defense^{S1}. Always at the end of the training you have a little game, but at least the whole exercise part of the U-14 class is playful^{S3}.
CI-7: Teaching through games (S3, S7, S11) CSD7: In the U-17 I explore passes game^{S7}, I delimit the space and say that they cannot hit the ball; the goal is to change ten passes and the other team needs to recover the ball without contact^{S3}. Then I start changing some rules, like not being able to pass the ball to whoever passed you^{S3}. If I want the attack to be cleared of the defense, I will control and correct the defense a little more in the mini-games^{S11}. With the U-17 work in a larger space situation, it's the same game I work in the U-14, but the situation is bigger and I charge more the mark^{S7}.

Table V. CSD on the teaching of collective defensive contents in the U-14 and U-17 teams.

CI-8: Teaching through game situations (S1, S4, S5, S6, S7, S8, S10, S11) CSD8: I like game situations^{S1,S4,S5,S7,S8,S11}, without having to run the whole court, a more punctual action^{S1}, even if it does not have a lot of time to be very specific^{S5} because in the State it is only 2h30 of training per week, it is short time^{S8}. Generally, I work 1x1^{S6}, 2x2^{S1,S6,S11}, 3x3^{S6,S10,S11}, 4x4^{S11} until I reach the 6x6^{S11}, to work the whole team^{S6}; even with one team attacking and another defending in half the court^{S7}. Sometimes I opt for 2x3 or vice versa, always in superiority^{S5}. I put exercises that simulate a match, sometimes with 3x3 on one corner of the court and 3x3 on the other; when you dismember, mainly by emphasizing the game with the second pivot by these situations, it will understand and visualize better than in the 6x6^{S10}. I'm changing the positions, it's no use working 2x2 in the middle of the court because it can happen on the sides^{S11}.
CI-9: Teaching through games (S3, S4, S7, S10, S11) CSD9: Through games^{S3,S4,S10,S11}, the game gives security to them^{S10} and they already start thinking about more collective aspects^{S7}. The court I teach class measures 40mx20m but I cannot use it whole, must divide with another class; it's got a proper size, but it does not have the lines of markings, so I cannot use the wings, the area does not reach the wing and we end up doing more centralized mini games^{S3}. I use pass games very often, I think it is one of the activities I use most, I even give as a warm-up; the player gets smart with the pass game^{S7}. It can even be mixed of throw and pass game: you can only shoot after the ball has passed at least once for each player, so everyone has to unmark to receive the pass and at the beginning there is a player who cannot unmark^{S7}.
CI-10: Technique approach (S2, S4) CSD10: I work a lot of techniques in the initial part, which is the pass and the throw, without charging the perfect movement^{S4}. I use a lot of short work, type relays: it leaves, it attacks a cone and returns, using the 3m line or even in the passage of the area; or even using three players in a throwing position, from there on, hold the throwing arm and return to the 6m line. It goes from 6m to 9m on three occasions without throwing. When they are more accustomed, let them throw^{S2}.

DISCUSSION

In this section, the results will be discussed in two specific subsections. The first one refers to the content taught by the coaches in both teams (U-14 and U-17). The second refers to the teaching approaches used by coaches to address the content presented.

It should be noted that the discussion of aspects of the U-17 teams will be based on authors who have described and analyzed aspects inherent to the U-16 teams. This assumption is due to two reasons: a) the U-17 teams consist mainly of players in the U-16 teams (due to the involvement of the students in the last year of high school with the college entrance examination and, in other cases, the work to support your family); and b) by the fact that the ages of the teams, according to the Brazilian Handball Confederation (CBHb), are defined as U-16 and U-18 (an aspect that combined with the previous allows to understand such context).

Contents

In CSD1 the coaches point out different individual tactical defensive means whose objective is to hinder or impede the progression of the opponent towards the goal. The tactical elements most emphasized by the coaches were marking, followed by the coverage and the need to have good and fast displacements in the defensive phase.

The coaches also point out that for both the U-14 and the U-17 teams it is important to make the marking close (with contact) to prevent the attacker's progression (with his gaze focused on the waist of the direct opponent), and not only to try to steal the ball. However, differences in the performance of the tactical elements in the U-14 teams when compared to the U-17 teams are perceived in the CSD1.

The U-14 team is fundamental for the development of the handball player, in which the learning of different tactical elements is consolidated, especially of those more requested by the individual defensive system. Defenders should use means such as marking to unbalance the attackers (who try to fake and unmark, due to the proximity of the defenders) to regain ball possession. Krahenbühl & Leonardo (2018) point out that individual defense is based on 1x1 actions, and can be organized in different ways, such that defenders can increase pressure on the attackers.

The coaches' concern is also that defenders develop the notion of ball time, especially to steal the pass from one attacker to a teammate. The emphasis on marking in proximity is intended to slow down the attack and the chain of offensive actions. For this, it is important to develop the tactical means in diverse environments by various defensive systems (presented in CSD4).

Greco et al. (2012) point out that in the U-14 team the individual tactical defensive capacity must be developed, to stimulate the attempt to anticipate the actions of the attackers and, consequently, to attack them through marking, defensive posture, and intention to regain the ball possession (mentioned in CSD1 and CSD3). Consequently, these authors show that in the U-16 team other defensive tactical elements should be emphasized, such as covering, marking, sliding, blocking, and mutual aid (which depend on the learning of those mentioned in the U-14 team). In the U-18 team, the authors mention the appropriateness of the tactical elements to the variations of the context of the game (dependent on previous learning).

The CSD1 also highlights the relevance of contact marking and displacements in individual defense, which will be used in different zonal defensive systems. Thus, marking, buoyancy and coverage are closely linked to the individual

defensive system (Menezes 2010), and are consolidated as important constituents of zonal systems, especially those of open characteristic such as 3:3, 4:2, and 5:1 (Greco et al. 2012, Krahenbühl & Leonardo 2018, Menezes 2011).

This concept brings the importance of training and content planning that will be developed in the long term, so that their threads are clear to the players and internalized from the applications in the context of the game. The aspect related to the understanding of each tactical element is indispensable, opposing the stereotyped execution throughout the training, unrelated to the game (Menezes et al. 2015a).

In the U-17 team, the coaches demanded of defenders greater speed and more contact with the opponents, emphasizing the need for good body positioning to maintain balance and readiness to respond quickly to offensive variations. In this category, CSD1 also emphasizes the coverage, especially as it refers to mutual aid between defenders to try to close the spaces produced by their opponents' actions.

In handball, it is observed that between the U-16 and U-18 teams there is an increase in the demand for sports performance (Menezes et al. 2018) and, as a consequence, of sports specialization. For Santos et al. (2016) the U-16 team marks the period of specialization of handball players, based on the opinion of coaches who work in the stages of youth sports. The expectation in this study is to increase the knowledge about the game, and about the actions of the players, in aspects such as the use of the individual tactical elements (CSD1), collective tactical elements (CSD3), spatial and positional notion of players (CSD2), which are closely related to the development of defensive systems (CSD4) throughout the teaching-learning process.

It was also possible to observe that the speed increase mentioned in CSD1 in the U-17

team can be explained by two factors: the first one referring to the maturational aspects (especially with the increase of speed, strength, and muscle power after the growth spurt) (Malina et al. 2009); and the second related to the greater experience in handball that allows players to read different aspects of the game and, from their memory process, select the decisions that are more appropriate to specific contexts (Menezes et al. 2015a).

Due to these requirements, there is the expectation of a gradual (long-term) approach of the adult team, especially from the internalization of the different concepts that are related to the increase of the effectiveness of the players, verified in other studies that involved handball coaches (Menezes et al. 2018, Menezes 2018).

In CSD2 the coaches mentioned the spatial notion in an individual and collective context, highlighting the need for the defender to know where he is, as well as to know where his partner is positioned. This aspect is related to the development of different individual and collective tactical elements that are presented in CSD1 and CSD3. The CSD2 presents three possibilities from a good defensive position: to disturb the attacker to recover the ball, to disrupt the opponent, and to protect the own goal.

Such possibilities reinforce the defensive principles presented by Bayer (1994) and should be used from the indicators (such as speed, directions of displacements, and interactions with close attackers) provided by opponents throughout the game. The defenders' adjustments to such offensive actions should hamper the actions of the attackers and simultaneously induce them to make disadvantageous decisions, resembling the Nash equilibrium (Fiani 2004), since each strategy adopted by the players is the best possible response for strategies of

the opponents. From the decisions made and using the process of memory and knowledge about the game, players are expected to adopt strategies considered more appropriate for all possible situations.

In the U-14 teams, the coaches prefer a more individualized perspective of the spatial notion, which subsidizes the development of defensive principles and guides the conception of zonal systems taught in later or simultaneous moments to the individual system. In the U-17 teams, the emphasis is on the displacements, assuming that they have already learned the specific positions.

The spatial notion of the handball player is an essential element, a predecessor of the other elements of the game because with the positioning and understanding of the regions of the court will be possible to take decisions at the individual and collective level, build relationships between players and structure the game systems (discussed in CSD4 and discussed later).

In the CSD3 several tactical elements were taught during the training. Although the central issue has referred to collective elements, many of these relate to individual aspects such as fluctuation, coverage, and marking. Such mentions may be due to a conceptual confusion by the coaches, possibly explained by the fact that they are not familiar with some specific terminologies, deriving from a generalist higher education and with little support from the entities that manage handball in the State of São Paulo (Menezes et al. 2017b, Musa et al. 2017). Even so, these were kept together with CSD3 and will be discussed in the context of collective tactical elements such as bending and marking exchange.

In the U-14 team, there is a dependence on individual aspects for decision-making because players have a ball-centered view (Estriga &

Moreira 2015). The CSD3 makes clear the vision centered on the individuality of the players, despite pointing out some collective tactical elements (in a minority position to the individual tactical elements, also mentioned in CSD1). However, understanding the different elements of handball game (technique, tactics, and game systems) occurs simultaneously in a complex environment to which players is submitted and make decisions based on information from different sources.

The U-14 team marks the beginning of the structuring of the offensive phase in positioned systems (offensive and defensive), which can reveal possible spaces to be occupied and the possibilities of interaction between the attackers that, consequently, will provoke defensive responses, requiring knowledge and the use of specific tactical elements. This context facilitates the understanding of such tactical elements aligned to individual and zonal defensive systems, as well as emphasizes the importance of teammates (Krahenbühl & Leonardo 2018).

In CSD3 there is an indication of the difficulty of marking the pivot, which can be accentuated by the teaching of defensive systems such as 6:0 in the initial stages of the teaching-learning process. Nevertheless, the marking exchange (mentioned above) is one of the tactical elements that make it possible to minimize pivot marking failures, but that needs to be emphasized when defensive systems are taught (mentioned in CSD4).

It is understood, therefore, that the development of individual marking and open defenses should be understood as a pedagogical path to be followed, the purpose of which is to understand the spaces of the court (as mentioned in CSD2) and relations between teammates and/or opponents (as mentioned in CSD3).

On this subject, the CSD4 addressed the teaching of the individual defensive system in the U-14 team, highlighting the facility for players to understand the correspondences between defenders and direct opponents. Such prerogatives go to authors such as Ehret et al. (2002) and Menezes (2010) that the individual defensive system should be the first to be taught by developing different player skills, as well as the spatial notion (mentioned in CSD1).

Menezes (2010) states that the main characteristics of this defensive system are the attribution of individual responsibilities and correspondences, the development of the spatial notion and position of the defender, and the development of strategies to hinder the actions of his opponent. In this sense, Menezes et al. (2015a) an important pedagogical path after teaching individual defense should lead to defensive systems in two or more lines, especially for providing an understanding of space protection, in addition to the direct marker.

The aspects elucidated in CSD1, CSD2, and CSD3 meet the aforementioned authors' notes, mainly because they permeate the complexity of the oppositional relations in the positioned game, also corroborating the continuity of the contents addressed in the U-12 team (Menezes et al. 2011, 2016). In the U-14 team, there is a transition from the individual defensive system to the teaching of zonal systems (in particular 1:5, 3:3, and 3:2:1), whose concern turns to elements such as marking, tracking, and sliding (Greco et al. 2012), not mentioned by the coaches in CSD3. Although coaches mention the 3:3 defensive system (in CSD4), their use occurs in a way that is conditioned to the characteristics of the opposing team, and not necessarily related to the competencies developed in a long-term perspective.

Another aspect highlighted in CSD4 refers to the fact that the coaches know each other for playing several competitions in which they have appeared as opponents for a long time. In this case, although there are expectations regarding the opponent's behavior, the complex environment of the game is unpredictable, as teams try to structure/organize their game systems to take advantage of opponents' difficulties while trying to hide the weaknesses of their team. Changes that occur throughout the game cause changes in the opposing team to adapt to the modified context (Nash equilibrium), as by substitutions or changes in offensive and defensive systems.

Already in the U-17 team, the CSD4 points the option for the 3:3 defensive system, which is considered important for the development of the others. There is an expectation of better communication among advocates at this stage of learning, which can be influenced by two aspects: players' experiences (due to increased training and playing time) and the possibilities offered by zonal systems (especially 5:1 and the 6:0) by the proximity between the players.

On this progression in the teaching of defensive systems, Menezes et al. (2011) point out the main characteristics (competencies) to be developed from the individual defensive systems, which are preponderant to the learning of the zonal defensive systems. In this sense, the option for the 3:3 defensive system in the U-17 team presupposes greater specialization by specific positions, mainly attributed to the development of actions towards individual defense (in the U-14 team) and the teaching of zonal systems in this period.

Greco et al. (2012) point out that in the U-16 teams the 3:2:1 defensive system (and its variations) must be consolidated through changes in the opponent's offensive system. In the U-18 teams, the emphasis should be on

3:2:1, 5:1 (also with different forms of action), and combined defenses. Such notes reveal some discrepancy with CSD4, as it presents many defensive systems and some barriers encountered by coaches for the training of school teams.

The teaching of the individual and zone defensive systems in the U-17 team meets the technical-tactical specificities (pressing the attackers - which will lead to the development of individual tactical elements - and recovering possession of the ball - during the dribble or pass interception) and physical fitness (by the high intensity, coming from the need to be close to the opponent throughout the game).

The teaching of defensive contents

Based on the CSD presented in Tables IV and V, it was possible to observe that there is a preference for three teaching approaches for the development of the different competencies of the players: a) the technique approach (based on the teaching of technique outside the context of the game from series of exercises) (Greco 2001); b) teaching through games (based on the global-functional principle, which emphasizes different games complexities) (Dietrich et al. 1984); and c) teaching through game situations (situational approach, from functional units smaller than the full game) (Greco 2001).

Coaches showed a preference for teaching through game situations to address both individual and collective aspects in their training sessions. However, the teaching of individual content revealed that the technique approach was the second most used, followed by the teaching through games, unlike the teaching of collective content, which revealed as a second preferred the teaching through games, followed by technique approach.

This scenario demonstrates the greater use of active approaches (teaching through

games situations and games) for the teaching of collective contents of the defensive game, perhaps based on: a) the need for the player to understand the environment in which to make their decisions; b) in the low transfer associated with the technique approach between the content addressed and the application in the game.

Considering the teaching of both aspects (individual and collective) it was possible to identify the preference of nine coaches by the teaching through games situations (S1, S3, S4, S5, S6, S7, S8, S10, and S11), of seven coaches by the technique approach (S1, S2, S3, S4, S5, S6, and S9) and five coaches by the teaching through games (S3, S4, S7, S10, and S11). These findings reveal that the technique approach still occupies a prominent position for teaching, although a tendency is observed to change from this paradigm to the teaching of handball (Galatti & Paes 2007, Menezes et al. 2014). This condition may be related to the graduation time of the interviewed coaches (average of 19.5 years), to the approach in the disciplines offered in the scope of graduation (often reproducing contexts experienced as players) (Modolo et al. 2017, Reis & Castellani 2012, 2013) and lack access to contents that allow reflections on different ways of addressing such content. Thus, the learning of the technical elements of the game constitutes an interesting aspect, although it is not decisive for the game.

Before exploring coaches' explanations for each teaching approach, it is important to note that the training sessions of the U-14 and U-17 teams occur together (for a large part of the teams), either because of the low number of players, availability of the coach or school structure. Another factor is the short time available for the training sessions during the week (2.5 hours, according to CSD8), which may influence coaches' options for teaching

through game situations and games. Both are characterized by considering the player as a central element of the teaching-learning process and emphasize aspects such as decision making from the use of techniques that respond to contextual problems.

Specifically on the teaching approaches used by the coaches for the different contents, when the option referred to the teaching through game situations, it was observed the concern with the transfer of the training sessions to the context of the game.

The option for the teaching through game situations to teach individual (CSD5) and collective contents (CSD8) is indicated by the possibility (and necessity) of using reduced spaces (such as half of the playing court), in which they problematize the equality relations and numerical asymmetries. The asymmetries pointed out by the coaches refer to the offensive or defensive numerical advantages that are essential for the development of specific defensive aspects and are constituted as situations provided by the dynamics of the interactions of handball players in which different elements can be requested to comply the defensive principles. Greco et al. (2012) emphasize the importance in the U-14 teams of the 1x1 and 1x2 relations while suggesting in the U-16 teams the 3x3 and 4x4 ratios and in the U-18 teams the use of different defensive forms.

These situations are addressed by coaches, preferably under conditions of positioned play and, to a lesser extent, to offensive and defensive transitions, which may be related to the fact that there are only in half of the playing court (in several moments) for training, or because coaches simply do not use such a methodological option to teach the transition phases. Regarding the emphasis on the game, there is an allusion to the preference for the central region of the court (CSD5 and CSD8) and

the lateral ones (CSD8), revealing the concern with the development of the amplitude of the defensive actions, with the chain of these actions between the defenders and the understanding of problems inherent to each region of the court. Greco et al. (2012) indicate that in the U-16 team functional structures such as 3x3 must occur in different regions of the court (as mentioned in CSD8) and go further, determining that there should be variations in defenders' positions and the number of defensive lines (called "constellations" by the authors).

It should be noted that the variations in the regions of the court for teaching through game situations seek to develop the understanding of possible actions in all these, as well as the interactions among players in these. The intention is given by the fact that different regions of the court demand specific adjustments of the positioning and the displacements of the players. Menezes et al. (2014) also point out that this variation tends to minimize the reinforcement of stereotyped behaviors and specialization to solve problem situations in given regions of the court.

The findings of this study agree with Menezes et al. (2018), who identified in the U-16 and U-18 teams the teaching through game situations as the most used by coaches. The second approach most used by the coaches was the teaching through games in the U-16 team (for technical-tactical development) and the technique approach in the U-18 team (for player specialization and technique improvement). In the present study, the coaches mentioned the technique approach as the second most used for the teaching of individual defensive contents, whose preference is linked to learning a set of techniques, even though it does not offer a rich environment for the development of decision-making of players and without emphasizing oppositional relations. Such a reductionist

vision presented in CSD6 disagrees with the perspective of training pointed out by García Herrero (2003), for which to defend is not only a matter of motor tasks but also of cognitive tasks.

In addition to the scenario of variability in the relations between players (teammates and opponents) of the teaching through game situations that permeates numerical relations (equality or asymmetry) and/or spatial issues (central or side of the court, near or far from the central area), the coaches also indicate changes in the scoring system of the activities, to try to value the defensive actions.

The analysis of the momentum of elite handball matches by Mortimer & Burt (2014) pointed out that winning teams often meet the momentum cycle (scoring a goal, regaining possession of the ball, and throwing again). It is understood that when defenders succeed in their tasks and avoid goal scoring by the opponent, the team can benefit in the next attack with greater tranquility for the development of offensive actions (Menezes 2010).

The coaches emphasized the importance of teaching through games for individual content (CSD7) and collective (CSD9) defensive content. The similarity with the prerogatives presented when referring to the teaching through game situations (CSD5 and CSD8) is possibly due to the complexity imposed by the game context for the decision-making of the players. In this sense, the games develop well the players' understanding of the full game, especially concerning the development of trust and autonomy for decision making. This perspective is part of the essence of the teaching through games, based on simplified situations of the full game and less complex games (Dietrich et al. 1984, Galatti et al. 2012), with unforeseeable problems to be solved by players (Galatti & Paes 2007) and games with adjusted difficulty

levels according to the players' understanding (Menezes et al. 2014).

Coaches use similar games for the U-14 and U-17 teams (CSD7), for which the difference lies in the requirement for marquee excellence in the U-17 team when they allocate more space for the games in the training sessions. There is also an emphasis on passing and throwing (offensive technique) and marking, as mentioned in CSD9, perhaps because both can be taught in passing games with different rules (such as not being able to pass the ball to whoever last pass - CSD7 -, and insertion of the throws - CSD9).

The ability to solve problems of the game and the development of the collective aspects were justifications of the coaches for the use of the teaching through games. In CSD9 there is an expectation that players will understand the importance of thinking about their actions in a collective context, based on their relationships with teammates, opponents, and possible spaces on the court.

Considering this context for the teaching of handball, coaches change the rules of games to meet principles considered relevant in the game model of their teams, or to adjust the difficulty of teaching new principles to players (Menezes et al. 2014). Paes (2001) points out the importance of the game to the teaching-learning process when considering that the player must play to learn, rather than learn to play (premise this of the technique approach).

In a diametrically opposite position, CSD6 and CSD10 revealed the coaches' preference for using the technique approach for teaching individual and collective defensive content, respectively. Both discourses allude to the emphasis on the technical elements together with what they called the "physical fitness" (CSD6), without the presence of opponents or active opposition (at most acting as a "shadow").

The coaches hope to develop the “notion of time” (CSD6) of the defenders, leaving implicit the need to approach the attacker in possession of the ball and carry out marking close (in contact with the attacker). The coaches’ emphasis on the technical aspects (CSD6 and CSD10) is manifested in the execution of the movement for their refinement (CSD6), being contradictory to CSD10, that there is no requirement for a perfect movement.

The learning of the technique occurs, therefore, outside the game environment, in a decontextualized way, which makes it difficult to transfer to the context of the game because it is based on the exhaustive repetition of the movements for the automation of stereotypes (Greco 2001, Menezes et al. 2014), which can be demotivating for the players (Menezes 2010).

The transfer of the technique learned through the technique approach to the context of the game will occur after the learning of this, in particular when in CSD6 games and game situations are mentioned. However, given the complexity of the context of the handball game, only the mastery of techniques does not necessarily guarantee access to a good level game (Menezes et al. 2014), mainly because this method does not incorporate tactical problem-solving. In this sense, the model proposed by Estriga & Moreira (2015) is based on constructivist bases, valuing the cognitive and tactical aspects of the game, whose technique is taught to solve problems of the game, as well as the players’ understanding of the applicability of the technique in the tactical context.

Menezes et al. (2017b) interviewed handball coaches to identify the main teaching approaches prioritized by them in the U-12 team. The authors noted the concern to develop the players’ decision-making capacity, for which the coaches showed a great preference for the teaching through games and little importance

for the technique approaches. Although they have investigated coaches of younger teams than the present study (considering that U-14 teams in schools may be composed of younger players), the findings were divergent, especially regarding the teaching of individual content (CSD1 and CSD2), whose preference was for the teaching through game situations.

In the U-14 team, a study with trainers allowed to identify the most used teaching approaches (Menezes et al. 2015b), whose preference was given by the teaching through games and game situations (with emphasis on the combination of different approaches). These choices occurred because they considered that in this stage of development of the players the generalist formation should be recommended. When compared with the findings of this study it is understood that the main similarity occurs concerning the importance attributed to the teaching through game situations and games.

In general, this study identified the main individual and collective defensive contents taught by handball coaches of school teams and the teaching approaches adopted by them to consolidate the learning of these contents.

It initially pointed to the need to standardize the age of the teams in different competitive environments, which may facilitate the movement of players between teams from different contexts (school, club, and teams of cities, for example), who compete in non-equivalent age groups in different tournaments. It is also possible to express concern about the organization and management of teams by the coach, as well as the possibilities of exchanging information between them considering specific aspects of each stage of player development.

The analysis of the speeches revealed that the individual contents considered most relevant to the coaches were the marking, the base position, the cover, and the spatial occupation.

To consolidate the teaching-learning process of these, coaches mainly use the teaching through game situations, followed by technique approach and teaching through games. When asked about the collective contents, the coaches emphasized the importance of the exchange of marking, mutual aid, and defensive systems, whose approach is given mainly from the principles of the teaching through game situations, followed by the teaching through games and the technique approaches.

Because they are responsible for training teams at the school level, it is understood that both the teaching through game situations and games should occupy a more prominent place. Although the teaching through game situations was mentioned by most of the coaches to teach both contents, there was a decrease in the number of coaches who use the principles of this approach for the teaching of collective contents.

Regarding the teaching of individual and collective defensive contents, the requirements must present increasing difficulties, especially with the development of tactical intentions based on the understanding of the different elements of handball, based mainly on the principles inherent to teaching through game situations and games. It is not only about teaching content that can give access to games of good levels, but the development of players with critical sense and who understand the decisions made (intentionally) in the course of the game.

The use of both approaches prioritizes the development of the player's decision-making capacity, from abilities such as perception, attention, and anticipation, which demands of the coach the questioning of players that are focused on the "why". However, the findings of this study showed that there are no clear differences between the contents addressed in the U-14

and U-17 team in the school environment, which can be justified by the structural conditions of most teams, by the coaches' knowledge of the specificities of the handball or by the lack of guidelines for teaching and content progression. It differs from the proposal presented by Estriga & Moreira (2015), which are based on levels of play and stages of learning, in which they describe important differences in the understanding of the game to the elements addressed in different stages of the teaching-process learning.

It was possible to observe in the coaches' speeches gaps in the specific terminology of handball. It is suggested that other studies can contribute to map the specific knowledge of the coaches and provide reflections on their formative process.

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