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Instructional Cues in Futsal Teaching, Coaching and Matches

Pistas de instrucción en la enseñanza, entrenamiento y partidos de fútbol sala

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Abstract

This study investigated what are the verbal cues provided in futsal contexts of teaching-learning, training, and official matches, and what are their attentional foci. A cue refers to a short instruction that constrains the students/athletes to direct their attention to critical elements for successful performance. 1543 instructional cues were collected from Physical Education (PE) classes, futsal training sessions and futsal matches of an official championship. Data were analysed based on content analysis method and categorized through the Systematic Analysis of Pedagogical Content Interventions. Inferential analyses were run by the Trend Module (Trend Analysis and Multiple Comparisons) of PEPI software. The results showed that the category offensive technique (passing) was the one with the highest number of instructions in the classes, training and matches. It was also observed that rules and violations were similar between curricular classes and futsal training sessions. The findings allowed to verify (i) the primary cues physical education teachers and coaches provided, (ii) about which critical aspects they referred to and (iii) their specificity regarding the context specificity (classes, training and matches). The findings provide useful insights into the design of instructional tasks as the instructional cues allow students/athletes to gain knowledge about the learning task and to direct their attention to critical elements for successful performance.

Keywords

Instruction; Sport teaching; Sport coaching; Futsal.

Resumen

El objetivo de este estudio fue investigar cuáles son las pistas instructivas proporcionadas por los profesores de educación física (EF) en el contexto escolar de enseñanza-aprendizaje, entrenamientos y partidos oficiales del fútbol sala, y sus respectivos focos de atención. Se recogieron 1543 pistas instructivas de las clases curriculares centradas en la enseñanza-aprendizaje de fútbol sala, entrenamientos de fútbol sala y partidos de fútbol sala de un campeonato escolar oficial, en los que participaron cuatro profesores de educación física. Los datos fueron analizados con base en el método de análisis de contenido y categorizados a través del Análisis Sistemático de Intervenciones de Contenido Pedagógico. Los análisis inferenciales fueron ejecutados por el Módulo de Tendencias (Análisis de Tendencias y Comparaciones Múltiples) del software PEPI. Los resultados mostraron que las pistas instructivas de la categoría técnica ofensiva (pases) fueron las más utilizadas en las clases, entrenamientos y partidos. También se observó que las reglas y las violaciones eran similares entre las clases curriculares y los entrenamientos. Los hallazgos permitieron verificar (i) las principales pistas instructivas utilizadas por los profesores de EF, (ii) sobre los aspectos críticos a los que se referían y (iii) su especificidad con respecto al contexto de enseñanza (clases, entrenamientos y partidos). Estos hallazgos brindan información útil sobre el diseño de tareas de instrucción, ya que las pistas instructivas permiten a los estudiantes adquirir conocimientos sobre la tarea de aprendizaje.

Palabras clave

Instrucción; Enseñanza deportiva; entrenador deportivo; fútbol sala

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Introduction

Over the last few decades, futsal has been increasingly practiced worldwide for different purposes (e.g., leisure, health, education, and profession) by individuals of different ages, needs, and expectations (e.g., children, adults, elderly, and disabled people) (Corrêa et al., 2019; Moore et al., 2014; Sanmiguel-Rodríguez & Arufe-Giráldez, 2021). As a result, futsal has been increasingly focused on academic studies to meet the increasing knowledge demands from coaches and practitioners (Moore et al., 2014; Sanmiguel-Rodríguez et al., 2021). In this regard, recent revisions have shown that futsal studies have been developed mainly in relation to the following subjects: participation and development, physical and physiological and psychological aspects of training and competition, futsal related injury, technical and tactical analysis of futsal, dynamics of futsal game, relationship between football and futsal players, small-sided games in futsal, and development of futsal coaching (e.g. see Beato et al., 2016; Moore et al., 2014; Sanmiguel-Rodríguez & Arufe-Giráldez, 2021; Sanmiguel-Rodríguez et al, 2021).

Despite the advances in the existing knowledge related to the aforementioned subjects, not much attention has been given to the instructional dimensions of futsal coaching and/or teaching (Moore et al., 2014). Although these latter terms have been treated as related to distinct phenomena such as learning of educational content and physical, technical, and tactical training, respectively, actually they can be considered as synonyms or at least similar (Armour, 2018). This is because they refer to the intervention of a professional (sports coach or PE teacher) with the objective of acquiring, maintaining or improving the performance of a student, player, athlete or even a team (Armour, 2018). As posed by Rink (2020), a good coaching is a good teaching and good coaches are good teachers.

Teaching/coaching is a complex process since it unfolds through the interaction of several components that change dynamically (Tani et al., 2020). For instance, curriculum or competition characteristics, students or athletes, material and technology, learning or training content and school or sporting club have been pointed out as some of these components that, when interacting, give the teaching a complex character. Although the functioning of each component brings a particular contribution to the teaching/coaching, one could say that PE teachers/coaches play an important role in its success because they make decisions and act on

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the establishment of the desired behavior, as well as on the selection of the contents and strategies for reach it (Kubayi et al., 2019; Serrano et al., 2013).

Over the last few decades, successful teaching/coaching has been associated with several PE teacher/coach's abilities, including that of instruction (Lander et al., 2015; Rink, 2003; Ward & Lehwald, 2018). Instruction may be seen in a broader sense (e.g., instructional classes; instructional context). However, here it is being used as how a PE teacher/coach communicates with the students or athletes to get them to comprehend the task goal, the key aspects for successful performance, and the solutions to perform it (Schmidt et al., 2018).

Notwithstanding the instruction is an essential ingredient for successful performances, how it affects the students/athletes' comprehension of the task depends, among other aspects, on the PE teachers/coaches' knowledge about the task demands as well as the students/athletes or teams needs (Kubayi et al., 2019; Roberts et al., 2019). In fact, such knowledge have been recognized as essential to one of the most important PE teachers/coaches' instructional ability: providing cues (Fronske, 2015; Ward & Lehwald, 2018).

A cue refers to a kind of short instruction that constrains the students/athletes to direct their attention to critical elements for successful performance (Fronske, 2015; Pasetto et al., 2021). It can be said that this is one of the most common actions of the PE teachers/coaches, because regardless of whether it is during the practice of a drill, small-sided game, collective or individual tactics of defense or attack, or even during a game, they are constantly calling attention of students/athletes to some crucial aspect for achieving successful performance. A cue can be provided through drawings, figures, or gestures (visual cues), manipulation of specific body parts (kinaesthetic cues) and/or concise phrases, often one or two words (verbal cues). In addition to selective attention, since verbal cues are brief and precise, they allow students/athletes more time to practice a task instead of listening to long instructions (Pasetto et al., 2021).

The PE teachers/coaches' ability to identify critical stimuli in sportive environments and transform them into instructional cues begins to be developed from previous experiences in sports and during the PE undergraduate course (Moore et al., 2014; Rink, 2020; Tani et al., 2020). Moreover, it has been pointed out that PE teachers/coaches' abilities to make

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decisions, use strategies for managing students' needs, and be aware of relevant stimuli in the teaching environment are developed throughout teaching experiences (e.g., Serrano et al., 2013). Based on the foregoing, we considered that identifying which are the instructional cues the experienced PET/coaches provide could be a useful contribution to the advancement of the futsal teaching/coaching. To put it in another way, such identification would advance by showing not only what to call attention to in relation to futsal, but how to do it. For this purpose, we analysed the instructional cues of PET/coaches from a specific Brazilian context. In addition to being one of the sports most approached by PET in Brazil, in the schools of the state of São Paulo, besides the PE curricular classes (two per week), futsal is approached by different paths or programs of specific training, which aim the School Games of the State of São Paulo (an official school championship whose average participation involves more than 50000 students) (Silveira et al., 2020). Therefore, based on the foregoing context for data collection, this article sought to identify the futsal instructional cues provided during teaching (PE classes) and coaching (futsal training sessions and matches of official competition).

Method

Participants

Four PET/coaches from a public school in the state of São Paulo (Brazil), male, with an average age of 38.8 years (± 7.6), took part in this study. Their average experience time was 16.4 years (± 7.0 years). Participation required everyone's written consent, and the Institutional Review Board approved the research protocol to protect human subjects at the local university.

Data collection

Data were collected during (i) four PE curricular classes focusing on teaching-learning of futsal, (ii) four futsal training sessions and (iii) four futsal matches of an official school championship. The matches occurred after the training sessions which, in turn, took place in the same period as the PE classes.

Regarding the PE classes, they comprised two classes of seventh and eighth grades of elementary school, in which 131 students, male and female, aged between 12 and 15 years old took part. All classes lasted 50 minutes and were developed by one of each teacher. The

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training sessions also lasted 50 minutes, and the same teachers developed them. They involved the participation of 107 students aged between 13 and 14 years old. Finally, the matches were two of male and two of female students. They involved the participation of 56 students aged between 13 and 17 years old, and lasted 30 minutes. Therefore, each PE teacher provided instruction in one class, one training and one match, all of them related to futsal.

Two digital cameras (Casio Exilim EX-FH100 – 10.1 megapixels), one lapel microphone coupled to a waist transmitter (Sennheiser XSW 12 – Band A) and one Sony digital voice recorder (ICD PX-240) positioned on the teacher’s forearm were used to capture the instructions. The recorded instructions were inserted into the cameras’ footage through the free software *Openshot Video Editor* (v. 2.4.4). In order to capture the entire teaching environment, the cameras were positioned so that they captured the actions of both teachers and students (Figure 1).

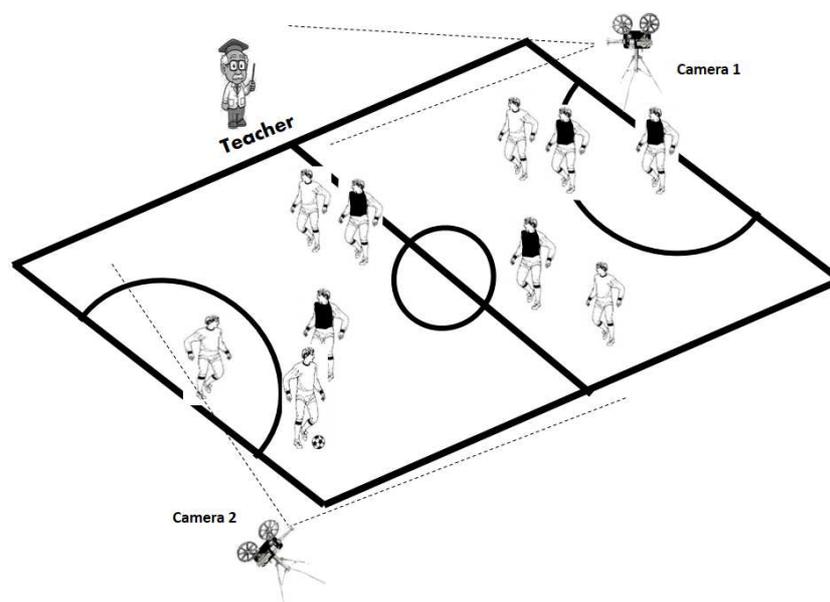


Figure 1 - Data collection environment.

Data analysis

PE teachers/coaches’ instructions in the PE classes (n = 286), training sessions (n = 486) and matches (n = 771) were transcribed *ipsis litteris* and categorized according to the Systematic Analysis of Pedagogical Content Interventions – SAPCI (Gilbert et al., 1999). This instrument allows to categorize the instructions into four main components: “what”

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(content), ‘*when*’ (moment of transmission), ‘*how*’ (manner to transmit) and ‘*who*’ (person receiving instruction). In this study, only those instructions related to the ‘*what*’ category were considered for analysis because they deal specifically with the pedagogical intervention’s content (Shulman, 1987). Specifically, the content was categorized concerning the following seven aspects:

- (1) Offensive technique (driving the ball, receiving, ball controlling, dribbling, passing, thrown in, heading, shooting and a goalkeeper);
- (2) Defensive technique (recovering, intercepting, heading and a goalkeeper);
- (3) Individual offensive tactic (positional game, demarcating, penetrating, tactical schedules, neutral situations /split ball/confusion);
- (4) Individual defensive tactic (positional game, marking and compensation);
- (5) Collective offensive tactic (offensive coverage, mobility, width and depth space, organized attack and counterattack);
- (6) Collective defensive tactics (containment, coverage, balance, width and depth concentration, zone defense and mixed defense);
- (7) Rules (violations and fouls).

Data were analysed through content analysis by considering three sequential processes (Bardin, 2006): (1) pre-analysis, in which the material to be analysed was organized in order to make it operational; it is a phase in which the initial ideas are systematized; (2) exploration of the material, in which occurred the identification of both registration and context units; (3) results from treatment, inference and interpretation, in which information was condensed and highlighted. After that, the instruction was interpreted, mainly by identifying the keywords used to direct the student’s attention to what should be done. For example, instruction ‘your back’ meant that the student should approach and mark an opponent positioned behind him/her and, therefore, referred to individual defensive tactic - positional game.

Data were analysed by considering the relative frequency (% of occurrences) of each instruction in each category concerning the total number of instructions. For this purpose, instructions provided above 10% were analysed concerning the action and the category it belonged to. Instructions provided at a frequency below 10% were grouped and named ‘others’. This procedure allowed us to identify the most frequent instructions. It was carried

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out within each dimension of the teacher’s professional practice (PE classes, futsal training and championship matches). The inferential analyses were conducted using the Trend Module (Trend Analysis and Multiple Comparisons) of WINPEPI software (Gahlinger & Abramson, 2005) by considering the $p < .05$. As can be seen below, "others" involved several categories and focuses, thus, to ensure the robustness of the comparisons, only the higher frequency was considered in the analyses. The reliability of analyses was verified by a correlation test between observers ($r = 0.8$).

Results

PE classes

Results revealed that the category with the highest number of instructions was offensive technique (33.92%) (Table 1). In it, passing and shooting were those instructions' foci with 21.68% and 12.24%. This category was followed by rules (rules and violations) with 19.93%. Others instructions (46.15%) ranged from 0.35% to 8.74%. They included: offensive technical, individual defensive tactic, individual offensive tactic, collective offensive tactic, defensive technique, collective defensive tactics and rules (fouls). The trend analysis and multiple comparisons test revealed differences among the foregoing frequencies ($\chi^2 = 24.47$, $df = 3$, $p < 0.01$). Specifically, it was verified that the frequency of passing cues were greater than those of shooting ($p < 0.05$). And, that both, frequencies of passing and rules and violations cues were greater than those of others category ($p < 0.05$).

Table 1 – Instructional cues by category and focus during physical education curricular classes.

Category	Focus	Cue
Offensive technique	Passing	Passed; one touch; one-two; in floor; begins (pass to whoever is behind); again; go; wait; over there
	Shooting	Shot/shoot; kick; hit; big toe; in the goal
Rules	Rules and violations	Go on; kick in; in the line; in the middle; penalty; wait; indirect; 4 seconds; goalie area; you can go; keep going in; corner kick; you score; hand; goalie kick; you can't; go; stop
Others		

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Futsal training

Results revealed that the category with the highest number of instructions was offensive technique (22.64%), whose focus was on passing during futsal training sessions (Table 2). The second most frequent category was rules (rules and violations), with 17.08%. Others instructions (60.28%) ranged from 0.21% to 8.64%. They included: individual defensive tactic, collective offensive tactic, offensive technique, individual offensive tactic, collective defensive tactic and rules (fouls). The trend analysis and multiple comparisons test revealed differences among the foregoing frequencies ($\chi^2 = 35.68$, $df = 2$, $p < 0.01$). Specifically, it was verified that the frequency of passing and rules and violations cues were greater than those of others category ($p < 0.05$).

Table 2 – Instructional cues by category and focus during futsal training.

Category	Focus	Cue
Offensive technique	Passing	Touch; passed/pass; one-two; begins; drop; again; play; in him; fast (fast pass); go; return; on here; with the foot; on the side; you can play; back; tap
Rules	Rules and violations	Side; follow; exit / left; valid; line; corner kick; space; goal; 2 touches; area; barrier; slide-tackle; wait; it was not; can go; you can go out; backward; only 2; not like this; snake; with the foot; out; medium; you can't; you can play; proceeds; rolling; advantage
Others		

Championship matches

Results revealed that during futsal matches, the category with the highest number of instructions was individual defensive tactic (37.78%), whose foci were on positional game (24.51%) and marking (14.27%) (Table 3). The second most frequent category was the offensive technique (passing) with 11.41%. Other instructions (49.81%) ranged from 0.13% to 9.08%. They included: individual offensive tactic, offensive technique, offensive technique, rules/violations (fouls), defensive collective tactic, offensive collective tactic, offensive individual tactic. The trend analysis and multiple comparisons test revealed differences among the foregoing frequencies ($\chi^2 = 84.80$, $df = 3$, $p < 0.01$). Specifically, it

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was verified that the frequency of positional game cues were greater than those of marking, passing and others ($p < 0.05$). And, that frequency of marking was greater than those of others category ($p < 0.05$).

Table 3 – Instructional cues by category and focus during futsal matches.

Category	Focus	Cue
Offensive technique	Passing	Touch/touched; one-two; again; start; pass/passed; come here; give; on ground; look; here; play; in front; fast; let go; tap; turn around; with the hand; with the foot
Individual defensive tactic	Positional game	Close; comes; in the back; go back; be positioned; stay; wing; behind; backward; on here; will not; the hits; just stop; advances; on the side; over there; ahead; stop; take him; over here; forward; tackle; don't jump; go there; you there
	Marking	Press; near; here; tackle; in your front; just stop; follow him; look here; you there; yours; don't try; reach; like a glue; decreases; over him; stop him; your position; surround; strong; bite; in that player; in the ball; don't stop; him; in yours; in your position; don't leave; you; you go
Others		

PE classes vs. futsal training vs. championship matches

As previously described, there were 1543 instructions from which 50.2% were provided during the futsal matches, 31.1% in the futsal training sessions and 18.6% over the curricular classes. As shown in the previous results, several instructions were provided within each category for specific actions. Table 4 shows the most frequent instructions among them, that is, those most frequent instructions provided during PE classes, futsal training and matches among those previously presented in each of the most frequent instruction categories.

The order of relative frequency of instruction in terms of category was different between the three dimensions of teaching (Table 4). However, regardless of order, it is observed that the category offensive technique (passing) was common to all of them, involving the instructions ‘pass/pass, one-two, touch/touched and one-touch’. It was also observed that rules and violations were similar between PE classes and training sessions, with the instructions ‘side and go on’ (equally for both), ‘in the line and the middle/exit’. Other

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similarities occurred between training and games, in the categories individual defensive tactics - opposing ('pull over, press/pressed, block and decrease') and individual offensive tactics positional - game ('open/opened, go up/up, appears and get out').

Table 4 - The most frequent cues provided during curricular classes, training and matches.

ORDER	Curricular Classes	Training	Games
1	Offensive technique (passing) • "passed" (59.8%) • "one touch"(12.9%)	Offensive technique (passing) • "touch" (29%) • "play/pass" (23.6%) • "one-two" (12.7%)	Individual defensive tactic (Positional game) • "closes" (23.2%) • "come" (16.4%) • "the back" (13.7%)
2	Rules and violations • "go on" (18.7%) • "kick in" (14.5%) • "on the line", "in the middle/start" (12.5%)	Rules and violations • "side line" (26.5%)	Individual defensive tactic (Marking) • "press" (27.2%) • "near" (10%)
3	Offensive technique (shooting) • "kick/score" (48.5%) • "hit/shoot" (40%)		Offensive technique (passing) • "touch/touched" (25%)

Discussion

This study aimed to investigate the futsal instructional cues provided during futsal teaching (PE classes) and coaching (training sessions and matches of official competition). Results showed that during curricular classes, training and matches were provided 1543 cues, among which those most frequent were:

- *Passed/pass, one-touch, touch, play/pass* and *one-two*, for the student to pass the ball to a teammate;
- *Go on*, for the student to continue the game after an action that could be considered a fault;
- *On the line*, about how the student should position the ball on the lateral line to restart the game;
- *In the middle/start, sideline* and *kick in*, about how the student should restart the game in the central circle after a goal;

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- *Kick/score* and *hit/shoot*, for the student to kick the ball to the goal;
- *Dominate/control* and *hold/hold the ball*, for the student to maintain the possession of the ball;
- *Press, decreases, near, closes, tackle/block* and *pull over*, for the student to block the ball line or reduce the space between him/her and the attacker opponent in order to prevent a shooting or passing;
- *Open* and *appears*, for the student position him/herself on the sides of the court to receive a passing;
- *Come*, for the student position him/herself in the defensive area;
- *The back*, for the student to pay attention to the opponent behind him/her;
- *Up/go up, get out* and *'leave'*, for the student to move from defensive to offensive area.

In addition to the possibility of the student/athlete being successful in the practiced task by being able to be attentional attuned to its critical aspects (Pasetto et al., 2021), a cue could enable another important educational benefit: knowledge about the task. As the cues were provided in different contexts, they could imply knowledge about what, how or when to do, and what to pay attention to during PE classes, futsal training and championship matches. To put it in another way, an instructional cue could be considered potential knowledge since it contains information about key aspects for performance success (Silveira et al., 2013). Therefore, a cue would not refer to just a short verbal instruction provided for directing the students/athletes' attention to the essential aspects of performance, but it would also be the own knowledge of what is needed to succeed (Silveira et al., 2013; Pasetto et al., 2021).

The results of this study also showed similarities and differences between the provided cues in the PE classes, training and competitive matches contexts. In PE classes and futsal training sessions, the category with the largest number of cues was the offensive technique focusing on passing. In fact, this was the only category present in all dimensions of professional practice, although not primarily in the futsal matches. Probably it occurred because of the importance of the motor skill: the pass is characterized as a means of communication between teammates; through the pass, a team maintains possession of the ball and prevents the opposing team from being able to complete the objective of the game (Pinho et al., 2020). Such importance can also be inferred based on the emphasis given to the pass in the futsal literature (e.g., Silva et al., 2017). The category rules and violations also received much attention during classes and training. It is possible to think that knowledge about them brings an education value by considering they are socially established to regulate the game at

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all levels of participation (Corrêa et al., 2019). Moreover, the knowledge about rules implies knowledge about the futsal game's functioning (Raiola et al., 2020).

On the other hand, it is important to note that in futsal matches the category in greater quantity referred to the defensive individual tactic, whose emphasis was on the positional game and marking. Therefore, it appears there was great concern with the individual defensive organization. Maybe, the individual action has been emphasised due to the importance of correcting an athlete's individual positioning so that he/she could block the ball line or reduce the distance between him/her and the attacker to avoid a passing or shooting during the game (Tenga et al., 2017).

It is also interesting to note that the number of interactions between PE teachers/coaches with their students/athletes through the providing of cues was significantly higher in the matches than in PE classes and training. This may have been because the interrelated dynamic and competitive natures of the match. The fact that futsal players constantly change their behavior to cooperate with each other forming a team and, as a team, change their actions depending on the opposing team, makes the futsal game a highly dynamic system (Corrêa et al., 2020). Thus, it may be that the PE teachers/coaches have provided a high number of cues in order to make the students/athletes attuned to the dynamics of the game (Otte et al., 2020).

Conclusion

In sum, the results of the present study allowed to verify the main futsal cues PE teachers/coaches provided in curricular classes, training and matches as well as about which critical aspects they referred to. It was also verified the cues' specificity regarding the context: while the cues occurred in greatest quantity in matches focusing on individual defensive tactics, in PE classes and in training they were directed to the offensive technique of passing. Our findings, in addition to contribute with the advancement of knowledge about the instructional cues in the futsal contexts, can still inspire useful insights into the design of practice tasks. For instance, despite the values of the pass and the rules, since training is an intervention process that aims to improve performance in the match, it seems reasonable to suggest that the instructional focus on training should be redirected to its needs. That is, during training the coaches should prioritize individual defensive tactic instead of passing.

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Importantly, these conclusions are closely related to the methods and findings of the present study. Therefore, at least they need to be replicated in order to achieve the necessary consistency for generalization. Although there were a significant number of cues (N = 1543), the fact that only four PE teachers/coaches participated can be seen as a limitation to be considered in future studies. Additionally, genders comparisons, both regarding the PE teachers/coaches and students/athletes should also be considered.

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