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Guide for the observational control of offensive group tactics in soccer

Guía para el control observacional de la táctica grupal ofensiva en el fútbol

Um guia para o monitoramento observacional da tática ofensiva de grupo no futebol

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ABSTRACT

Observational control models are used to carry out studies of opponents, allowing the tactical strategist to detect and plan a group of actions according to the weaknesses and strengths of the opponents. The objective of this research was to make a guide for observational control on offensive group tactics in soccer for analysts and coaches of this sport. Methods such as experiential experience, observation, documentary review and reflective critical opinion workshops were used. A non-probabilistic discretionary sampling was used where the arguments were elaborated by 20 members of the International Group for the Preparation, Rehabilitation, Recreation and Research and Improvement in Soccer disciplines; these professors, analysts and soccer coaches belong to the Universities of Camagüey and Las Tunas. Two observation guides were made for the games and another one for the soccer training, both in function of the observational control of the offensive group tactics. It was verified the application of the elaborated observational guides that allow knowing the depth with which the soccer players manage to form and externalize the tactical habits during the game.

Keywords: Observational control; Sports intelligence; Observation guide; Training; Soccer games.

RESUMEN

Los modelos de control observacional son utilizados para realizar estudios de contrarios, le permiten al estratega táctico detectar y planificar un grupo de acciones según las debilidades y fortalezas de los contrarios. El objetivo de esta investigación fue confeccionar una guía para el control observacional sobre la táctica grupal ofensiva en el fútbol para analistas y entrenadores de este deporte. Se utilizaron métodos como el vivencial experiencial, la observación, la revisión documental y los talleres de opinión crítica reflexiva. Se utilizó un muestreo no probabilístico discrecional donde los argumentos se elaboraron por 20 miembros del Grupo Internacional para la Preparación, Rehabilitación, Recreación e Investigación y Superación en las disciplinas del Fútbol; estos profesores analistas y entrenadores de fútbol pertenecen a las Universidades de Camagüey y Las Tunas. Se confeccionaron dos guías de observación a los juegos y otra para el entrenamiento de fútbol, ambos en función del control observacional de la táctica grupal ofensiva. Se constató la aplicación de las guías observacionales elaboradas que permiten conocer la profundidad con que los futbolistas logran formar y exteriorizar los hábitos tácticos durante el juego.

Palabras clave: Control observacional; Inteligencia deportiva; Guía de observación; Entrenamiento; Juegos de fútbol.

RESUMO

Os modelos de controle observacional são utilizados para realizar estudos de oponentes, permitem ao estrategista tático detectar e planejar um grupo de ações de acordo com os pontos fracos e fortes dos oponentes. O objetivo desta pesquisa era criar um guia para o controle observacional de táticas de grupo ofensivas no futebol para analistas e treinadores de futebol. Foram utilizados métodos como experiência experiencial, observação, revisão documental e oficinas de opinião crítica reflexiva. Foi utilizada uma amostragem discricionária não-probabilística onde os argumentos foram elaborados por 20 membros do Grupo Internacional de Preparação, Reabilitação, Recreação e Pesquisa



e Melhoria nas disciplinas de futebol; estes professores e treinadores analistas de futebol pertencem às Universidades de Camagüey e Las Tunas. Dois guias de observação foram preparados para os jogos e outro para o treinamento de futebol, ambos em termos do controle observacional de táticas de grupo ofensivas. A aplicação dos guias de observação elaborados foi confirmada, o que nos permite conhecer a profundidade com que os jogadores de futebol conseguem formar e exteriorizar os hábitos táticos durante o jogo.

Palavras-chave: controle observacional; inteligência esportiva; guia de observação; treinamento; jogos de futebol.

INTRODUCTION

Nowadays, modern soccer is so competitive, so it faces multiple challenges according to the nature and dynamics of the game, motivates researchers to identify patterns and performance indicators (Dufour *et al.*, 2017), which can provide coaches with useful information on individual and collective analysis of their players (Gudmundsson and Horton, 2017). In this sense, Caicedo and Calderón (2020) state that the quantification of offensive tactical actions are basic units within the analysis of data quality.

The quantification of offensive tactical actions, the frequency with which they are executed individually and as a group, as well as the beginning and end, the identification within areas of the field, both own and opposing, are basic units within the analysis of the quality of the data. This is based on a refined observation analysis, where a dynamic ecological perspective is developed (Lozano *et al.*, 2016) that allows the existing relationship between actions and tactical situations framed in perception, identification, decision and execution.

Correspondingly, in the analysis of observational methodology there are different instruments that aim to collect and provide information on different variables in the sporting aspect (Maneiro *et al.*, 2017; Fabra *et al.*, 2018; Nadal *et al.*, 2018). Likewise, and according to Anguera *et al.* (2018), the importance of observation in the sports field, from a procedural aspect, lies in the fact that it is the only scientific methodology that allows the collection of data directly from participants in training and competition, from the capture of perceptible information (p. 17).

The oldest method (observation) has been used to obtain better analyses of soccer games: Amatria, Maneiro and Anguera, (2019); Amatria *et al.* (2019); Clemente, *et al.* (2019); Machado *et al.* (2019); García-Angulo *et al.*, (2020).

Consequently, Caicedo, Vera & Ortega (2018) state that "...the dynamics of the game needs an instrument that allows synthesizing and interpreting the ongoing interactions" (p. 12). Which allows understanding the how and why in sports performance, which admits detecting functional behaviors and patterns of the offensive group, according to the complexity of more functional actions.

Determining these aspects in the players allows the inclusion of entropies, which should be consolidated theoretically, mentally and practically in training (Martín *et al.*, 2015a, p. 9). Regarding the types of controls, (Martín *et al.*, 2015b) refer that they allow knowing the depth with which the players have managed to form and externalize the tactical habits, which cannot be rigid but flexible, must be rewarded with creativity and susceptible to constant improvisation (...) that is where the player has to be able to



overcome the personal duel through a dribble, a legal charge, deceptive play or a Locomotor Tactical Displacement (DLT in Spanish).

In sports, artificial intelligence and sports intelligence are becoming important topics for recreational, school, high performance and even academic and scientific purposes. In this regard, Albarrán (2020) stated that social circles discuss and promote forums aimed at making virtual environments mediated by technology, in this case, sports, more efficient.

In these categories, artificial intelligence and sports intelligence, the author refers to the meaning of sports intelligence, but not before differentiating it from artificial intelligence, where both are tools that favor sport.

For the above mentioned, Albarrán (2020) highlights that "Artificial intelligence (deep learning) as part of a broader set of machine learning methods, based on the assimilation of data representations, can be used for countless things, such as classification or prediction". As well as, such methods and techniques solve to a great extent the problems and cases that arise around sport, making a real revolution of sports service, in areas of sports performance analysis with application in sports biomechanics (Albarrán, 2020) "such as Expert Fuzzy Systems, Multilevel Neural Networks or Evolutionary Computing". But, sports intelligence defined by the authors: It is the discipline of Management Sciences that allows obtaining, in a systematic and organized way, significant information about the characterization of the external environment and the internal conditions of a sports team, which allows the development of strategies that facilitate the execution of a technical-tactical action that contributes to obtain in an efficient and effective way, competitive advantages in their sport (Martín et al., 2014, p.12).

The author refers that, contrary to artificial intelligence, sports intelligence is primarily focused on sports performance, high performance and sports success at a very high competitive level.

In professional soccer, today almost all teams employ tracking technology to monitor performance during training and matches. In recent years, there has been a rapid increase in both the quality and quantity of data collected in soccer (Goes et al., 2019). There are specific observation instruments in sport that have served as a reference for experts in the field. They consist of a series of criteria with their respective categories and they must be exhaustive and mutually exclusive, as defined by Anguera (2015):

- Exhaustiveness: the set of observation units fully covers the conceptual scope delimited by the object of study.
- Mutual exclusivity: each of the units of observation designates a class of behavior which conceptual and operational meaning cannot be confused in any aspect with that of others.

In this case, models for the control of individual and group tactics are an important tool for diagnosis (Sanpedro, 1999). Although there are models for the observational control of offensive tactics, they do not fit the particularities of the research. The study carried out allowed the determination of the existing cognitive deficiencies and the lack of a guide for the observational control of offensive tactics during training and the game. Based on the aforementioned, the objective of this study is to create guides for observational control of offensive tactics in soccer for soccer analysts and coaches.



MATERIALS AND METHODS

In order to carry out the research, a qualitative observational study was carried out, where different methods were used, such as theoretical, experiential, documentary review and reflective critical opinion workshops; in the practical order, the unstructured interview was used as a living source of personal communication.

Material and sample

A non-probabilistic discretionary sampling was used where the arguments were elaborated by 20 members of the International Group for the preparation, rehabilitation, recreation and research and improvement in soccer disciplines (GIPR²ISDFUT); these professors, analysts and soccer coaches belong to the Universities of Camagüey and Las Tunas.

RESULTS AND DISCUSSION

Observational control of the offensive group tactic

The observation guide on offensive tactics was constructed to be applied in the competitive game activity. Group tactics are linked to groups of players, which depending on their position, can be homogeneous (players of the same position) or heterogeneous (players of different positions). The table is composed of 8 aspects, seven of them linked to tactical actions and one to the area in which it occurs. The aspects to be controlled, 6 and 7, constitute research results published in previous articles by members of the GIPR²ISDFUT, while the other aspects were suggested to be incorporated in the reflective critical opinion workshops. This guide allowed studies of sports intelligence during the team's own game, the correspondence between what is oriented and executed by the soccer players was determined in order to make the necessary corrections (theoretical-mental-practical).

General data: Date: ____ Place: ____ Team: ____ Category: ____ Province (state):
____ Country: ____

Soccer player (name and surname): _____

By means of the observation guide, the objective is to control the offensive group tactical activity of the players who participate in the offensive tactical blocks (midfielders and forwards) during the game (Table 1).

Objective: to determine the execution of offensive group tactical actions in the game of soccer.



Table 1.- Observation guide for soccer games

No.	Aspect to control	Parameters, mark with X or enter numerical amount
1	Parameters to be met in group tactics (passing) oriented by the coach.	Types of passes: depth, breadth, surprise, deception, change of direction, clearance, assistance, continuous, progress, backward and cutback. Yes _____ No _____ How many? _____ Resultado: B _____ R _____ M _____
2	Tactical variations executed in the offensive game.	Yes _____ No _____ How many? _____ 1. R for 1st _____ 2. R for 2nd _____ 3. R for 3rd _____
3	Restructuring or modification of tactics in or during the game.	Yes _____ No _____ When? Minute of the game _____ Resultado: B _____ R _____ M _____
4	Types of polyvalent actions performed by the player without the ball (Tactical Locomotor Displacements). Unmarking and support.	Cross: __ Curtain: __ Diagonal: __ Front: __ Back: __ Right side: __ Left side: __ _____
5	Type of complex game used (offensive).	How many? 1. Rotations: _____ 2. Swap: _____ 3. Change of position: _____ 4. Drag: _____ 5. Compensation: _____



6	Type of dribbling performed.	<p>How many?</p> <p>Simple:</p> <p>-For dominance: hat and aerial control of the ball: _____</p> <p>-Feint, variants: cycling and movements without ball: _____</p> <p>-Change of pace: acceleration and deceleration: _____ -Ability: maintaining contact with the ball (elastic inward and outward): _____</p> <p>-Auto pass: touches one side and runs through the other, tunnel: _____</p> <p>-Pietrobrability in driving: zig-zag driving: _____</p> <p>-Jump, variant: control between the feet and jump: _____</p> <p>-Balanced ball control: keeping the ball on top of some part of the body: _____ -Speed: touch and run: _____</p> <p>Complexes:</p> <p>-Double touch or more: two or more aerial touches: _____</p> <p>-Coordination: stereotyped (mechanical) movements: _____</p> <p>-Stepping: stepping and pulling the ball in different directions: _____</p> <p>-Mixed: use of more than 3 simple dribbles (only to evade an opponent) : _____</p> <p>-Timing: deception, show intent to execute and after the reaction of the opponent act: _____</p> <p>-Combined: two combinations of different single dribbles, use of up to two types: _____</p>
7	Type of deceptive game executed.	<p>How many?</p> <p>With twists: _____</p> <p>With feints: _____</p> <p>With change of address: _____ With change of pace: _____</p>
8	Street, zone and area most used for attack in the game.	<p>Street 1__ Street 2__ Street 3__ Street 4__ Street 4__ Street 1__</p> <p>Street 2__ Street 3__ Street 4__</p> <p>Street 4</p> <p>Zone 1__ Zone 2__ Zone 3__ Zone 4__ Zone 4__</p> <p>Areas (16): _____</p>



Source: GIPR²ISDFUT

Legend: TGO: Offensive Group Tactics, B: Good. R: Not good. M: Bad.

Observational control of the offensive group tactic

The second observation guide on offensive tactics is made to be applied in the training activity. Group tactics on the actions of homogeneous or heterogeneous players during simulated training is a key to materialize in the competition, however, these should not only be trained practically, but also theoretically and mentally. This table is composed of 9 aspects, 8 of them linked to tactical actions and one to the area in which they occur. The aspects to control from 1 to 8, constitute research results published in previous articles by members of the GIPR²ISDFUT, which are referenced in the bibliography, were deepened through the explanations described, on aspects 2 and 3 were suggested to incorporate. This guide allows for sports intelligence studies, both on the opponent to be faced and on the team itself; this diagnosis made it possible to carry out a better preparation during the training matches, first on the defensive to counteract the offensive of the opponent and then to potentiate the present one.

General data: Date: ____ Place: ____ Team: ____ Category: ____ Province (state): ____ Country: ____ Player (first and last names): ____

By means of this observation guide, the objective is to control the offensive group tactical activity (TGO) executed by the players during training (Table 2)

Objective: to determine the execution of offensive group tactics actions in soccer training.

Table 2. - Observation guide for soccer training

No.	Aspect to control	Parameters, mark with X or enter numerical quantity
1	Information on the tasks or activities related to the TGO.	Yes _____ No _____ When? At the Beginning _____ In Development _____ At the End _____ How does it do it? _____
2	Relationship of the specific warm-up with the main part of the training (TGO).	Yes _____ No _____ Why _____
3	Correspondence of the planned exercises with the objective of the TGO.	Yes _____ No _____ How many _____ Dedicated minutes: 5' _____ 10' _____ 15' _____
4	Number of players used in TGO exercises.	No. 2 _____ 4 _____ 6 _____ 8 _____ Positions _____ Conditions (complex, contextualized, demanding or undemanding training): _____



5	Positions in which the versatile player trains.	1 ____ 2 ____ 3 ____ 4 ____
6	Types of polyvalent actions performed by the player without a ball (DLT).	Crossing: ____ Curtain: ____ Diagonal: Front: ____ Back: ____ Right side: ____ Left side: ____
7	Differentiated training for the multipurpose player.	Yes ____ No ____ Dedicated time: ____ Types of exercises performed (description): _____
8	Type of complex game used (offensive).	How many? 1. Rotations: ____ 2. Swap: ____ 3. Change of position: ____ 4. Drag: ____ 5. Compensation: ____
9	Street, zone and area most used for attack in the exercise.	Street 1 ____ Street 2 ____ Street 3 ____ Street 4 ____ Street 4 ____ Zone 1 ____ Zone 2 ____ Zone 3 ____ Zone 4 ____ Zone 4 ____ Areas (16): _____

Source: GIPR²ISDFUT.

Caption: -TGO: Offensive Group Tactics. B: Good. R: Regular. M: Bad.

Structure for the positional location of the player on the soccer field according to the areas (lanes and zones)

The abstract subdivisions with imaginary lines on the soccer field illustrated below were support tools for both observation guides (these are linked to aspects number 8 and 9 of the tables), since the offensive tactical action occurs in a certain place on the field by dividing the field into lanes and zones, which together make up 16 areas, which make it possible to pinpoint the location in which it has occurred, a relevant aspect, since not all areas have the same offensive danger. This favors the execution of an accurate diagnosis by the observer who records the action of the offensive group tactic (Figure 1, 2, 3).



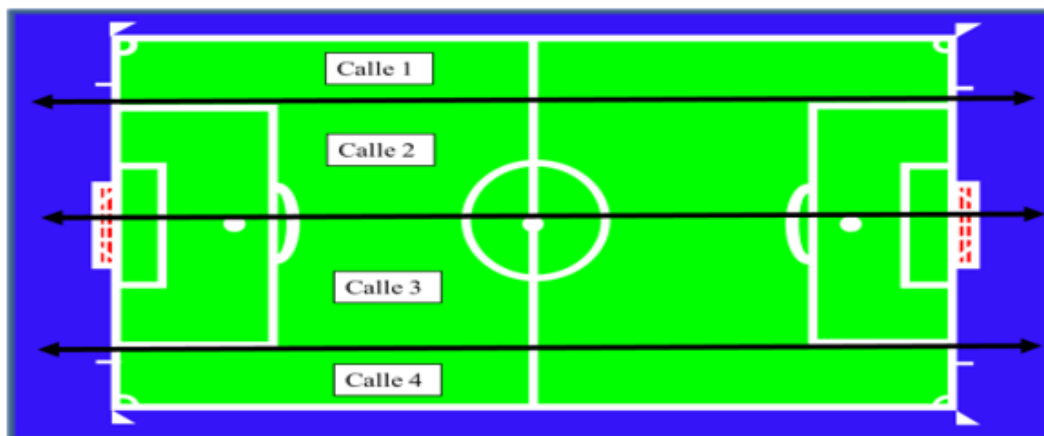


Fig. 1 -Soccer field. The lanes (4), these in turn, could contain smaller microlines or micro-passages
 Reading, always from left to right

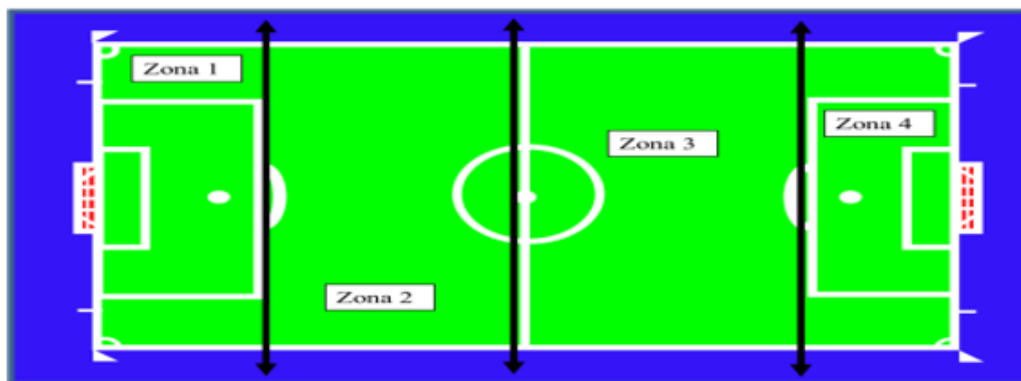


Fig. 2 -Soccer field. The zones (4)
 Reading, always from left to right.



Fig. 3 - Soccer Field. The areas (maximum safety areas 5 and 9; safety areas 1 and 13; foundation areas 2, 6, 10 and 14; construction areas 3, 7, 11 and 15; completion areas 4 and 16; touchdown areas 8 and 12)
 Consecutive reading, always from left to right



The beginning of the training period favors the observation of the tactical, technical, physical and psychological characteristics of the players, thus orienting the planning to specific aspects, inherent to the functionality of the game (Bettega, Galatti, Schmitz, Tozetto, Longarela, and Scaglia, 2016). The observational control of the offensive group tactics on the attacking blocks during the game is determinant, Martín (2018) exposes that, "...knowing precisely which are the planned and improvised tactical drawings, used more frequently, (...) must be in correspondence with the integral profile of the players available" (p.10).

In this sense, Anguera *et al.*, (2018), made a practical tool for the collection of clear and systematic information that allows defining parameters for their respective analysis. This instrument was designed as an observation system, which allows to analyze in detail how the offensive tactical actions were executed.

As a starting point for the analysis in this article, related to models for the observational control of offensive group tactics in soccer, Martín *et al.* (2014) describe the logical methodological structuring of a new school for Cuban soccer, where the starting point is the ordered and coherent classification of the component elements of tactics in soccer, which still does not meet the expectations expected by the current study. Consequently, another model is made that allows the control of the game system (Martín *et al.*, 2015c, p. 7) composed of the game model scheme, tactical drawings and individualities. In this sense, it is good to highlight its use during the 2016-2017 season in the Cuban National Championship, an aspect that consolidates its generalization in the country. It is convenient to specify that it is not foreseen the control, neither of the game models, nor of the successive aspects that compose it, aspects to which a solution is given from the group point of view in the mentioned article.

Consequently, in 2015, a more comprehensive study is made that reaches the magnitude of everything concerning the soccer game, where Martín, Montero and Blanca (2016) addressed the reading of the match and the soccer game and steps of progress were achieved with respect to the observational control of tactics, but the control of group tactics, related to the tactical drawings linked to the blocks and lines that make up a game system, was not foreseen, an aspect that is given a solution in the new proposal.

Even without meeting the needs on sports intelligence studies, conducted through observational control models, Martín, Montero, and Blanca (2017a) elaborate a new model for observational control on collective tactics and tactical moments at the service of sports intelligence in soccer. To show in practice its application, two teams are compared during the final in Europe (mecca of world soccer) of the 2017 "Champions League" (Real Madrid versus Juventus). Regarding these aspects on offense, Martín, Montero and Blanca (2017b) perform a thorough analysis of these components, but still insufficient in terms of the precision that must be known in the operation of the so-called tactical drawings, hence the importance of the new proposal.

In another sense, graphs 1, 2 and 3 contain the streets and zones, which make up 16 areas. These were designed with the objective of correctly locating the place where the actions take place, in order to determine regularities and plan future training on offensive group tactics.

The analysis corroborated that the observational control on the offensive group tactics in the attacking blocks during the game is important. Where the types of controls will allow to know the depth with which the players manage to form and externalize the



tactical habits, which should be rewarded with creativity and be susceptible to spontaneity.

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The authors have participated in the writing of the work and analysis of the documents.



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