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ORIGINAL ARTICLES

TEACHING FOR UNDERSTANDING THE INTERNAL LOGIC OF SPORTS: A PERSPECTIVE BASED ON TEACHING GAMES FOR UNDERSTANDING AND MOTOR PRAXIOLOGY

ENSINO PARA COMPREENSÃO DA LÓGICA INTERNA DOS ESPORTES: UMA PERSPECTIVA BASEADA EM TEACHING GAMES FOR UNDERSTANDING E PRAXIOLOGIA MOTRIZ

ENSEÑANZA PARA LA COMPRENSIÓN DE LA LÓGICA INTERNA DE LOS DEPORTES: UNA PERSPECTIVA BASADA EN TEACHING GAMES FOR UNDERSTANDING Y PRAXIOLOGÍA MOTRIZ

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Abstract: This essay aimed to propose a perspective of Teaching for Understanding (TGfU) the Internal Logic of sports from the methodological structure of TGfU and knowledge about internal logic of Motor Praxiology (MP). Considering specific criteria for literature review, 18 articles were selected that supported the theoretical discussion. Methodological aspects of TGfU and the main concepts of MP were presented, which enabled the theoretical articulation proposed in this essay. As main contributions from the perspective of Teaching for Understanding Internal Logic, didactic tools were structured to mediate the teaching-learning process from the subject/environment relationship. In addition, a methodological systematization was proposed to organize the pedagogical practice for the development of Teaching for Understanding Internal Logic. Finally, it contextualizes the need for further studies that seek to identify how this perspective helps teachers in the teaching-learning process of sports.

Keywords: Teaching. Games, recreational. Sports. Review.

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1 INTRODUCTION[1]

Sports' teaching is a topic that has been intensely debated in the academic field. These debates present several systematization proposals for the sports teaching process (GALATTI *et al*, 2008; GARGANTA, 1998; SCAGLIA; REVERDITO; GALATTI, 2013). The Base Nacional Comum Curricular (BNCC), normative document of Brazilian education, point the importance of the global develop of sports, considering it like a totality that surpasses the simple sum of the parts (RIBAS *et al*, 2019). One of the most widely studied and reported proposal is the Teaching Games for Understanding (TGfU) model that was developed by Bunker and Thorpe (1982) that aims to overcome the strictly technical teaching method. As its name already suggests, this methodological proposal aims at developing the students' ability to understand the game dynamics.

This model proposes that the game actions are developed based on their tactical demand. As claim Bunker and Thorpe (1986, p. 7), "[...] traditional methods tend to focus on specific (technical) motor responses and do not take into account the contextual nature of games" (our translation). They also add that "[...] with the emphasis on tactical considerations of the game, children will recognize that it can be interesting, which will encourage them to make correct decisions, based on tactical awareness" (our translation) (BUNKER; THORPE, 1986, p. 7). According to Costa *et al.* (2010, p. 3), the TGfU "puts the student in a position of active builder of his own learning, valuing cognitive processes of perception, decision making and understanding of the game" (our translation).

However, in its didactic-methodological structure, TGfU does not present sufficient tools to comprehend the sports' dynamics of operation and points out which elements are relevant to this organizational sports logic. Thus, there is a need for the adoption of tools for analysis of this operation logic, in order to guide the teaching-learning process aimed at understanding this intrinsic dynamics, which needs to be understood in depth to be consistently systematized and developed. The critical point is: how the teacher can elaborate classes with aim to teaching for understanding considering the specificity of the dynamics generated by the rules of each sport?

From this assumption, Motor Praxiology presents itself as a scientific theory that offers substantial elements for the understanding of the internal logic of any motor practice (PARLEBAS, 2001). Motor Praxiology provides fundamentals to understand the most specific characteristics of games and sports internal logic. Praxiological knowledge gives theoretical support to the processes of stating and interpreting messages, decision-making and game reading, which are essential for any sports teaching-learning process. Based on this understanding and numerous possibilities of articulation between these two elements, this essay aimed to present the Teaching for Understanding Internal Logic perspective, starting from TGfU methodological structure with Motor Praxiology knowledge as internal logic's theoretical basis.

1 The article presents considerable developments in relation to the original text of the first author's dissertation, especially in terms of results. The Teaching Games for Understanding model and Motor Praxiology: Systematization of teaching for understanding internal logic of Volleyball. 2019. 135 f. Dissertation (Masters in Physical Education) - Federal University of Santa Maria, Santa Maria, 2019.

2 METHOD

This essay configures itself as theoretical research (DEMO, 1995). For Demo (2000, p. 20), theoretical research is “dedicated to reconstruct theories, concepts, ideas, ideologies, controversies, with a view, in immediate terms, to improve theoretical foundations” (our translation). This essay is also exploratory in nature, as it dedicates itself to “developing, clarifying and modifying concepts and ideas, with a view to formulating more precise problems or researchable hypotheses for further studies (our translation)” (GIL, 2008, p. 27, our translation). Richardson (2012) points out that exploratory research aims to establish relationships between phenomena, aiming to understand and, above all, to delimit these conceptual approaches.

In order to enable the theoretical density necessary for the conceptual delimitation of a teaching perspective based on TGfU and Motor Praxiology the theoretical research was also used (DEMO, 1995). Were used the keywords TGfU/ Teaching Games for Understanding and Motor Praxiology/Praxiologia Motriz in Web of Science and SciELO to search articles. These indexers were used because they bring together high-impact journals in the field of Physical Education and especially with regard to the debate on Sports Pedagogy that establishes itself as a benchmark for the quality of the academic debate. This research considered only studies that presented some of these keywords in their title, considering that these investigations sought to debate the themes with density, finding 84 articles.

For selecting this studies, the thematic, linguistic and chronological criteria were used, besides the main studies about the themes (SALVADOR, 1986). As thematic criteria, it was delimited to select the studies that had the objective to discuss the Motor Praxiology or the TGfU specifically. Regarding the language delimitation in this essay, studies written in Portuguese, Spanish and English were considered. It was assumed that the main studies performed by Parlebas were translated into at least one of the languages contemplated in this study and therefore did not insert the French as a search language.,

A chronological cut was not established for the articles selection because both of the elements’ theoretical matrices of this research have been under development for some years and therefore could not include substantial works for the proposed discussion. Moreover, the objective was not to analyze the scientific production in a given period, but rather to identify studies that could help in the debate on TGfU and Motor Praxiology, regardless of their publication date.

Considering these selection criteria, the abstracts of the 84 articles found were read and 18 articles were selected to compose this essay after the filtering process. This filtering process considered the following inclusion criteria: 1) articles that clearly present the TGfU and/or Motor Praxiology in their objectives; 2) field studies that debated the data with the scientific production in depth. As exclusion criteria was adopted: 1) articles that only used TGfU or Motor Praxiology as a supporting element in the study’s discussion; 2) articles that did not have an adequate scope for the purpose of this investigation.

Strategically, it was decided to present these researches in an articulated way with the debate, to support the discussion from a perspective of Teaching for Understanding Internal Logic. For the studies analysis, these 18 papers were read in their full version, and a file process was used to identify the knowledge found in the scope of this investigation. Following, this essay presents the main characteristics of the TGfU model as a main propose of Teaching for Understanding in Physical Education.

3 A BRIEF REVIEW OF THE TEACHING GAMES FOR UNDERSTANDING MODEL

The Teaching Games for Understanding model is considered a milestone in the sports teaching methods timeline. Having the objective of developing the sports' dynamic understanding, TGfU broke with the structures traditionally built around the sports teaching-learning process. Its creation, arising from the technicality incipience in the teaching task, links a new vision to substantial elements for sports development. TGfU presents itself as a specific methodological proposal for dealing with sports, which is based in teaching the game with the objective of understanding its functioning dynamics; thus, placing the student as an active participant in their own learning (BUNKER; THORPE, 1982; HOPPER, 2002; GRAÇA; MESQUITA, 2007; KIRK; MACPHAIL, 2002).

Professors Bunker and Thorpe officially structured TGfU in the publication of the article "A model for the teaching of games in secondary schools" in an issue of the Bulletin of Physical Education. However, Sánchez-Gómez, Devís-Devís and Navarro-Adelantado (2014) clarify that the initial TGfU construction process can be dated even earlier, between the years 1972 and 1973, when Bunker and Thorpe met as professors from the University of Loughborough in England and reported the failure of their experiences with the sports teaching-learning, denouncing the problems of the strictly technical teaching.

This movement fostered the systematization of an alternative proposal for sports development, giving rise to the TGfU model. This direct connection between the TGfU model and the difficulties found in the pedagogical practice is understood as one of the main advances as a methodological proposal, starting from the problems arising from the daily sports' teaching, primarily with regard to lack of motivation and student failure in overly technical sports teaching (SÁNCHEZ-GÓMEZ; DEVÍS-DEVÍS; NAVARRO-ADELANTADO, 2014).

Regarding the theoretical conception that TGfU shares with sports teaching, Bunker and Thorpe invite Physical Education teachers to rethink not only the characteristics of the teaching process, but also their own role as educators in this context, promoting and discussing problem situations faced by students in relation to what happens in the game (BOLONHINI; PAES, 2009; CLEMENTE, 2012; CLEMENTE, 2014; HOPPER, 2002; KIRK; MACPHAIL, 2002, STOLZ; PILL, 2014).

Based on Constructivism, the TGfU model assumes that learning is constructed from the relationship established between the student and the environment (subject and environment) (BOLONHINI; PAES, 2009; CLEMENTE, 2012; KIRK; MACPHAIL,

2002; TAN; CHOW; DAVIDS, 2011). This relationship is substantial since the main element of the teaching-learning process proposed by TGfU starts from the students' interaction with structured games, strategically constructed to develop the game understanding. TGfU model proposes a teaching-learning process that is concerned with understanding the reasons for the game before developing its actions, based on the relationship established between the student and the game tactical variants (BUNKER; THORPE, 1982; BOLONHINI; PAES, 2009; STOLZ; PILL, 2014).

When considering the problems that the game presents, teachers' didactic and methodological options need to be guided by adaptations made to the formal sport based on their characteristics, the objectives set and the students' abilities (WEBB; PEARSON; FORREST, 2006; STOLZ; PILL, 2014). It is understood that there are two vital aspects for the teachers' pedagogical practice with TGfU model: in-depth knowledge about the sport they are developing and didactic resources (primarily questioning and problematization) that lead students to understanding this game's dynamic (FAGUNDES, 2017; CLEMENTE, 2014; TSUKAMOTO; ANDRADE, 2017; GRIFFIN; OSLIN; MITCHELL, 1995).

For the success of this model, it is necessary to establish didactic-methodological structures and concepts that guide the teachers' pedagogical practice. With this assumption, TGfU provides two axes to guide the sports teaching, which are the Pedagogical Principles - guiding pillars of teaching actions, from planning to the development of the class itself - and the TGfU model phases, class or session training moments that present specific objectives to be developed during the teaching-learning process in each stage.

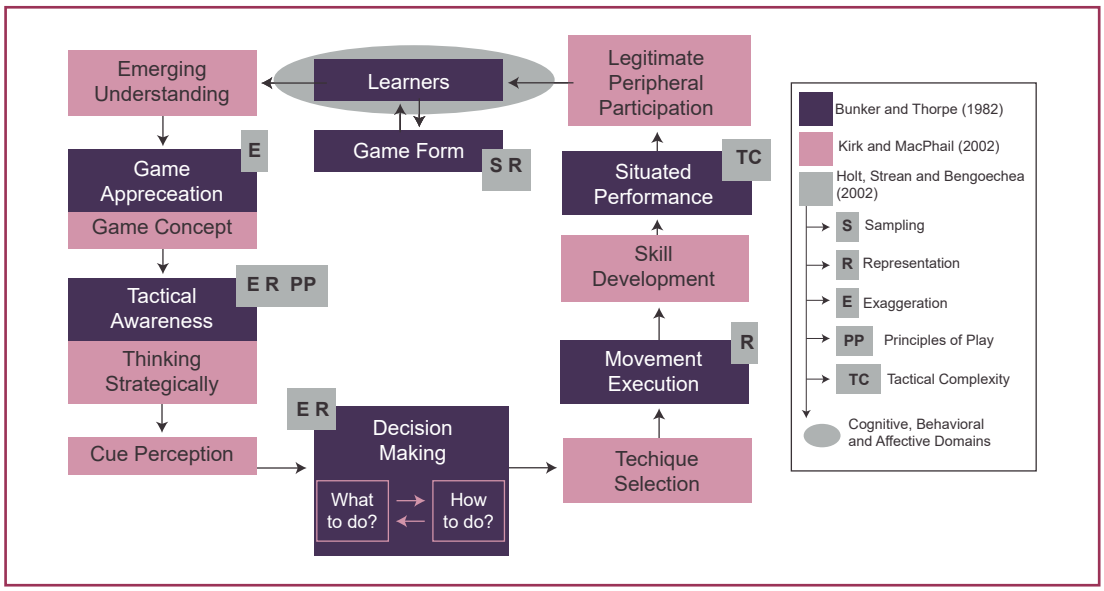
However, considering the consolidated academic debate about TGfU in the international context, it was possible to deepen the debate on TGfU's phases and Pedagogical Principles, elements that were enhanced by some authors and contributed to the TGfU development, with special attention to the works developed by Kirk and MacPhail (2002) and Holt, Strean and Bengoechea (2002). Below, Table 1 and Figure 1 summarize some concepts and main characteristics of the TGfU Phases and its Pedagogical Principles, observing the original concepts and new proposes.

Table 1 - Conceptual synthesis of the TGfU Pedagogical Principles

PEDAGOGICAL PRINCIPLES	DEFINITION
Sampling Thorpe; Bunker; Almond (1986)	Identification of the sport's characteristics from its classification, referring to its functional dynamic.
Modification by Representation Thorpe; Bunker; Almond (1986)	Structured games must preserve the functioning logic of the formal sport.
Modification by Exaggeration Thorpe; Bunker; Almond (1986)	Manipulation of the game rules in order to instigate the development of specific actions by students.
Tactical Complexity Thorpe; Bunker; Almond (1986)	Establishment of problem situations corresponding to students' skills and potential.
Principles of Play Holt; Strean; Bengoechea (2002)	Emphasis on strategic aspects adopted by students, individually and collectively, regarding the structured game.

Source: Elaborated by the authors.

Figure 1 –Teaching Games for Understanding model phases



Source: adapted of Fagundes (2017)

The first phases focus on characterizing and understanding the game's dynamics, guiding decision-making, which serve as a link between the actions performed by the players and the game context. Based on this, the technical actions will be qualified and improved after understanding the need for its use in the game. This will directly imply the ability to solve the problems that the conditioned game made possible, making students able to solve new and more complex game situations, restarting the process (FAGUNDES, 2017). This was just a brief presentation of TGfU characteristics' that aims to give a basic notion from this model to build conditions for propose the Teaching for Understanding Internal Logic perspective. Forward, the Motor Praxiology knowledge is discussed, presenting its contribution to game internal logic's analysis.

4 MOTOR PRAXIOLOGY: A THOROUGH VIEW ON GAMES AND SPORTS

Motor Praxiology was developed by the French professor Parlebas, between the 1960s and 1970s, at the René Descartes University - Paris V, in France. Deeply immersed in several areas of knowledge, such as Psychology, Linguistics, Semiotics, Mathematics and Sociology, Parlebas developed consolidated knowledge regarding the analysis of the internal logic of games and sports (LAGARDERA; LAVEGA, 2003).

The author conceptualizes Motor Praxiology as "Science of Motor Action and especially of the conditions, modes of operation and results of its development" (PARLEBAS, 2001, p. 354, our translation). Parlebas (2001), with this definition, emphasizes the guiding concept of praxiological discussions, the motor action, as a result of the subject's interaction with the characteristics that make up the games and sports internal logic, described from the motor practice rules. From this point of view, each motor practice - or praxiological system - presents unique characteristics, which give them structure and will directly interfere in the players' performance.

The system of rules of each motor practice is the generator of the internal logic. Parlebas (2001) defines internal logic as a set of characteristics that refers to consequences in the realization of the motor action. The internal logic guides the way the players can interact in the game context, from the establishment of the possibilities of players' interactions with four basic elements: space, other player(s), materials and time (PARLEBAS, 2017).

In the face of an internal logic, any players in a motor practice produce certain motor actions when interact in this praxiological system. Parlebas (2001, p. 41) conceptualizes the motor action as "the process of carrying out the motor conducts of one or more subjects who act in a determined motor situation" (our translation). In this sense, the motor action is characterized as a product of motor practice, that is, the Motor Praxiology raw material derived from the player/game relationship. Beyond this, for the Motor Praxiology view, the tactical elements mean much more than a simple organization in the space or a strategic action plan, including elements like anticipation, motor decision, interaction and situations' reading, all linked to the motor action derived of the internal logic in question and its application in different motor situations (PARLEBAS, 2001; LAGARDERA; LAVEGA, 2003).

However, the motor action concept is broad, including elements that match the game structure with its internal logic, aiming exclusively the analysis of the praxiological system without considering its protagonists' characteristics. From the moment that someone interact in a motor situation in the game, a motor conduct emerges, directly related to the subjective characteristics of the person who performs such motor action. The motor conduct is related with the personal characteristics and the consequences attached to players when inserted into internal logic, which could interfere in its characteristics by the interactions with space, time, material and other players (PARLEBAS, 2001).

Parlebas (2001, p. 269) defines the occurrence of a motor interaction when "[...] during the performance of a motor task, the motor conduct of an individual observably influences that of another or several of the other participants" (our translation). In this sense, there is an interference of other players in the motor conduct of those who perform a motor action, which is established through numerous exchanges of messages and processes of reading the motor conduct of the other participants. This perspective links meaning to motor conducts, pointing out that any players' actions will be emitting messages, which could be read by the other participants.

The motor interaction concept mentions how the motor actions will be performed in relation to teammates and opponents in the game context (LAGARDERA; LAVEGA, 2003). It is responsible for guiding all motor actions that will be carried out in the game, under the network of communication (cooperation) and/or counter-communication (opposition). Communication will be manifested whenever the motor conduct aims to facilitate the actions and the reading processes of the other(s) player(s). Counter-communication, as its name suggests, is linked to the process of hindering actions and interpretations of the motor conduct of the other(s) player(s) (RIBAS, 2014).

These interpretation processes are extremely complex and substantial for the execution of any action in a game or sport that presents motor interactions. Fagundes

and Ribas (2017) link the intervening success in game situations to the capacity of the players' reading processes, especially when it is understood that their own action is a transmitter of messages and that making them more obscure to opponents increases the unpredictability and hinders the opponent's reading processes, resulting in considerable advantages in game situations. At the same time, facilitating these processes for teammates enhances the team performance as a whole, especially with regard to strategic organizations.

In order to further deepen the games and sports analysis, it is necessary to consider Motor Praxiology' Universals Ludomotors. Parlebas (2001; 2020) developed the Universals Ludomotors, a tool that consists of seven operating models that deepen the internal logic analysis. The Universals Ludomotors can identify the specificities and characteristics of any motor practice. According to the author, the Universals Ludomotors are "operating models that represent the basic functioning structures of every sports game and that contain their internal logic" (PARLEBAS, 2001, p. 463, our translation). Due to its etymology, the term "universal" was used when considering the structuralist concept adopted by Motor Praxiology in relation to games and sports, to indicate models that permeate and characterize all motor practices in a globally way (LAGARDERA; LAVEGA, 2003; RIBAS, 2014).

Parlebas (2020) points out that the Universals Ludomotors refer to the game motor actions, from its various manifestations, in terms of communication, space, task, among others, giving them a logical-mathematical character. The seven Universals Ludomotors are presented and summarized in the Table 2:

Table 2 – Universals Ludomotors summary

UNIVERSAL LUDOMOTORS	DEFINITION	
	CONCEPT	CLASSIFICATION
Motor Communication Network	Possibilities of motor interaction granted to players by motor practice.	Exclusive vs Ambivalent Stable vs Unstable
Score Interaction Network	Motor interaction that needs to be established to score in motor practice.	Antagonistic Cooperative Mixed
Scoring System	Characterization of how the players' errors and successes are recorded in a motor practice.	Limit point Limit time Limit point and limit time By Established Score Without pre-established end
Role and Subrole Network	Systematization of the action possibilities of each player when assuming specific roles based on what is described in the rules.	Specifically linked to each motor practice
Gestemic Codes	Use of gestures to send messages as a substitute for using speech.	Univocal Individuals
Praxemic Codes	Interpretation of the players' motor conducts as a message broadcaster.	Encoding and decoding of participants' messages

Source: Elaborated by the authors.

This section attempted to explain some Motor Praxiology concepts briefly. However, the Motor Praxiology knowledge is complex and needs certain deepness in Parlebas' original work, especially in the Universals Ludomotors. As this essay aim at present a perspective to Teaching for Understanding Internal Logic, based on TGfU model and Motor Praxiology in a conceptual scope, it was necessary a short presentation of this knowledge for the research sequence. Thus, the next part of this essay will present this propose of Teaching for Understanding Internal Logic. It's important to clarify that this perspective doesn't have the intend to present changes in the TGfU model or the Motor Praxiology, but rather present a possibility to develop the internal logic of games and sports inspired by these two themes.

5 TEACHING FOR UNDERSTANDING INTERNAL LOGIC OF SPORTS: A PERSPECTIVE

The understanding of sports internal logic was the starting point that generated the problem that originates this essay, which is also the central axis of the TGfU proposal, as well as the focus of several debates in Motor Praxiology. However, this is not the only convergence point between the two elements mentioned here. Bunker and Thorpe (1982) and Parlebas (1988; 2001) shared the same concern regarding the teaching of sports: the limitations of teaching sports only through techniques decontextualized from the game internal logic. Accordingly, it is possible and interesting to propose a sports' teaching-learning that considers TGfU and Motor Praxiology knowledge.

Faced with this challenge, both approaches agreed that the understanding of the game logic should be the center of the theoretical and didactic-pedagogical proposals that they structured, incorporating it in their scientific productions in different perspectives.

While Motor Praxiology was concerned with establishing theoretical criteria for analyzing the internal logic of motor practices, TGfU was concerned with how to insert the tactical elements more effectively into the didactic-methodological organization, proposing systematization for sports teaching.

When considering the epistemological currents of TGfU and Motor Praxiology - constructivism and structuralism, respectively - an important element of the teaching-learning process is highlighted: the environment (TAN; CHOW; DAVIDS, 2011). In both conceptions, the environment becomes as much of a protagonist as the subject itself. The constructivist educational approach is known has a counterpoint to behavioral teaching, understanding that the learning is the result of the relationship established by the subject in the environment, and is not exclusively linked to the subject natural development or that the totality equals the sum of fragmented parts (LEÃO, 1999). Meanwhile, structural approach seeks to understand the phenomena from their relationships, which compose a complex system when established and proposing analyses that show "the invariant in the variants", that is, to create universal analysis schemes for these phenomena (GAMBOA, 2007).

This epistemological clarification helps to understand the role of each knowledge addresses in this essay. TGfU presents itself as a teaching model, a didactic-methodological proposal that guides the teaching-learning process based on specific characteristics. Motor Praxiology has the task of presenting a theoretical basis for understanding games and sports, as a tool to analyze the motor practice structure that provides elements to lead the teaching-learning process.

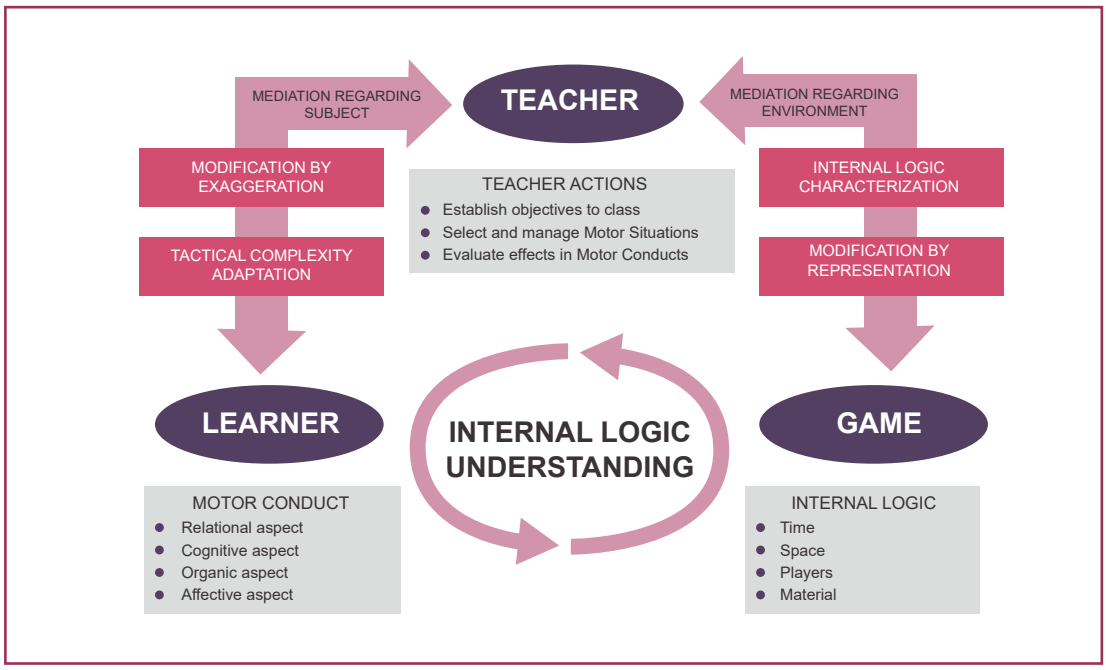
Expectedly, TGfU and Motor Praxiology incorporate these elements from the epistemological sources of scientific knowledge that supports them. The constructivist perspectives of an active student and builder of his own learning, as well as of the teacher as a teaching-learning process mediator, make TGfU a teaching model that predisposes didactic strategies from the teacher to build situations in which the student finds the answers requested by the problem situations of the game, that is, the environment.

Furthermore, knowing and controlling the teaching environment is fundamental for the quality of the teacher practice, comprehending the sports' internal logic as a system where the learner interacts all the time. It is in this aspect that Motor Praxiology has the potential to assist the sports teaching-learning process. Due to systemic and structural understanding of analysis, Motor Praxiology identifies the relationships that make up the sports internal organization, allowing the teacher to analyze them and, from these internal organizations, develop didactic structures with greater efficiency about the internal logic of sports.

However, if constructivist teaching is based on the relationship established between players and environment, the pedagogical treatment with the student, subject of the process, also lacks didactic tools specifically built, which is manifested in the sports teaching-learning process through motor conducts. In order to build didactic situations that interfere in the ways the subject acts, when considering the perspective adopted by the TGfU, it is necessary to stick to the characteristics of the motor actions, which, necessarily, need to be related to motricity (PARLEBAS, 2001).

Accordingly, in order to carry out the motor actions of a sport, the players need an accurate motor decision and motor skills specifically developed to solve the motor situations tasks', guided directly by the players' motor conduct. The motor conduct concept considers that the players' actions engage in a intertwined way considering four dimensions: organic, cognitive, emotional and relational (ARAÚJO; FRANCHI; LAVEGA-BURGUÉS, 2020). Starting from that point, the TGfU teaching-learning process, which is based in the players' interactions with the environment, can be managed by the teachers. For this aim, they should consider the internal logic characteristics as the environment and the motor conducts as the substrate of the players' interaction with this praxiological system, guided by the teachers' mediation. The Figure 2 illustrates this approach.

Figure 2 - Teaching for Understanding Internal Logic didactic tools for mediation of the elements of the teaching-learning process



Source: Elaborated by the authors.

In this systematization, it's possible to identify three specific roles to consider in any games' and sports' teaching-learning process: teacher, learner and game. The teacher, after establishing the aims of his/her class or training session, can manage how the learners can interact in the game as how the motor situations will be structured. Regarding it, the players' action can be mediated by the teacher through the pedagogical principle of modification by exaggeration with changes in the game rules to direct learners' actions and decisions, in situations guided by their level of skills and capacity of game's logic comprehension as assures the tactical complexity adaptation pedagogical principle. These interactions will generate effects on the different dimensions of learners' motor conducts, which can be evaluated as a result of the teaching-learning process.

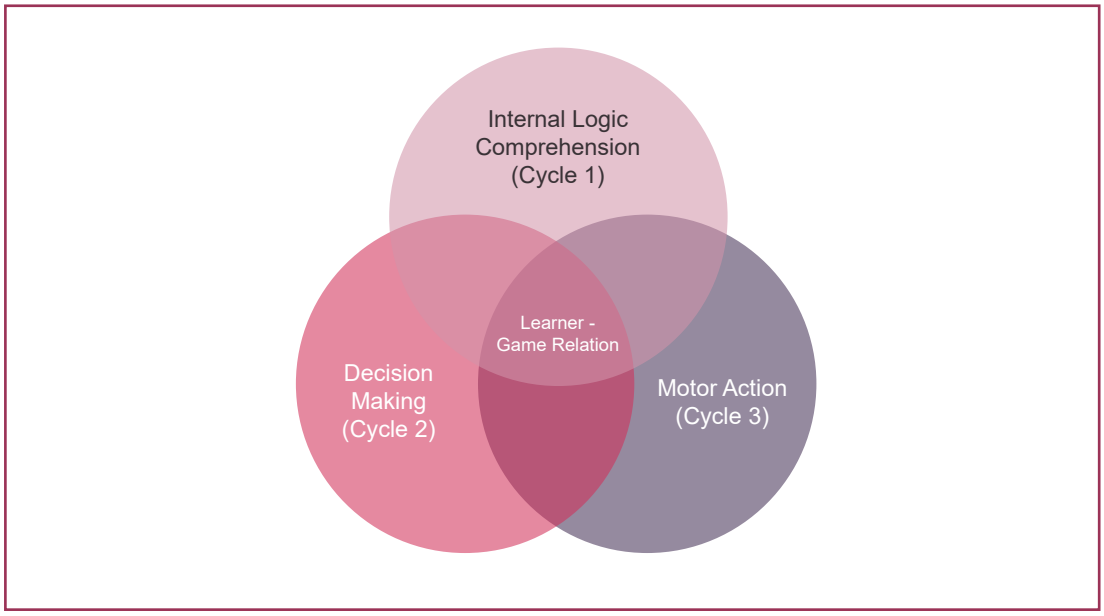
About mediations regarding the game structure, the teacher should take into account the game's internal logic characteristics and be careful when proposing a change in the rules of the game so that this does not detract from its internal logic, as assure the modification by representation. Thus, the internal logic systemic components (materials, time, space and others players) are substantial knowledge to subside the teachers' practice, which can be enhanced with the Universal Ludomotors deepening in internal logic analysis.

As claim Martinez-Santos et al (2020, p. 8), "understanding is interpreting, and interpretation is the outcome that results in "motor conducts" as far as an individual agent is concerned, and in "motor action" as far as the whole situation is concerned". And teaching, in this perspective, is conceived as a "process of building up semiotor habits that provides the players with the competence to anticipate and pre-act efficiently on pitches and courts where everybody can be fooled" (MARTINEZ-SANTOS *et al* . (2020, p. 8).

Therefore, knowing in depth the interactions that a player can establish in the internal logic of the sports is essential to develop an understanding of the game. This is the advance proposed by articulating Motor Praxiology with TGfU: knowing more deeply the possible interactions of players and developing tools that enhance understanding under the aegis of motor conduct. Furthermore, the concepts of Motor Praxiology are applicable to any motor practice, which prepares teachers to develop any sport without the need to be an expert in each modality that they are going to develop. This study focused on developing general proposals in relation to the understanding phase and learning elements of the internal logic. As future research, it will be necessary to deepen the relationship of these concepts with the principles of play in the specificity of the sports. With this parameters regarding learners and game structure, the teacher has new possibilities to establish aims to your class, evaluate the effect in the students and, specially, use tools to manage the learning-process with clarity and objectivity.

Therefore, in order to facilitate the pedagogical practice of Physical Education teachers, we propose a didactical structure based on TGfU and Motor Praxiology to subside the Teaching for Understanding Internal Logic. This proposal follows the main idea of the method and its steps with de internal logic's knowledge to develop the students' capacity of identify, analyze and interact the main elements that make up the situations belonging to a structure of a game. Thus, the Figure 3 and Table 3 unifies some of the TGfU stages in cycles, regarding the necessary knowledge in each one of the stages and articulating the Motor Praxiology concepts, considering the specifics aims of each cycle proposed.

Figure 3 - Teaching for Understanding Internal Logic perspective



Source: Elaborated by the authors.

Table 3 – Detailing of cycles and concepts from the Teaching for Understand Internal Logic perspective

CICLES	TEACHING-LEARNING PROCESS AIMS	TGfU STAGES	MOTOR PRAXIOLOGY ELEMENTS
Internal Logic Comprehension (Cycle 1)	➢ Identify the main rules that define the game's structure and actions	✓ Emeging Understanding ✓ Game Concept	✓ Internal Logic ✓ Universal Ludomotors
	➢ Unverstand the game dynamic and creat appropriat action strategies	✓ Tatical Awareness ✓ Strategic Thinking	✓ Motor Interactions
Decision Making (Cycle 2)	➢ Perform readings of the main signals emitted by companions, opponents and the envieronment	✓ Cue Perception	✓ Motor Interactions ✓ Gestemic and Praxemic Codes
	➢ Understand declarative and procedural knowledge - what and how to do it - in different game situations	✓ Decision Making ✓ Technique Selection	✓ Gestemic and Praxemic Codes ✓ Motor Conduct
Motor Action (Cycle 3)	➢ Identify and develop the main motor actions in specific game situations	✓ Execution of the Technique ✓ Skill Development	✓ Motor Action
	➢ Evaluate the student's performance in the game and identify the main problems of internal and external logic	✓ Performance ✓ Legitimate Peripheral Participation	✓ Motor Conduct ✓ Internal and External Logic

Source: Elaborated by the authors.

With this reorganization and complementation of the didactic-methodological proposal of Teaching for Understanding Internal Logic, the objective was to capture the main idea of TGfU and propose a new structure that articulates with the knowledge of the internal logic. Some TGfU phases, which have similar focuses, were combined in three cycles: Internal Logic Comprehension, Decision Making and Motor Action.

The Teaching for Understanding Internal Logic proposal starts with activities in game format that refer to the internal logic of the motor practice that is being developed, with an emphasis on the player's possibilities of interaction with others, with the space, material and time, considering what is described in the rules. From each specific objective of the classes, the teacher can work with only one or a combination of elements of the internal logic, if the students have already understood the basics regarding the structure of the game and know how to interact from the different situations exposed. Concerning to the understanding of the internal logic progresses, students need to create individual or collective strategies to overcome the constraints of game situations. The teacher's role is to mediate these situations and help students find solutions based on their characteristics and capabilities, including increasing or decreasing the complexity of tasks based on the performance that the group presents.

In cycle 2, the objectives of the class turn to the motor interactions between players, especially in the idea of cooperating with teammates and opposing opponents, being able to follow the same activity structure proposed in the first cycle or proposing another that has a direct relationship with the objective of the class. The elements of game reading and interpretation of the motor conduct of teammates and

opponents becomes substantial in order to be able to read the actions, anticipate them and interact in a coherent way in the game situations, based on the reading of the praxemics and gestemics codes. The teacher's role is to encourage students to understand the characteristics of the situation, how to interpret them and interact appropriately to these elements. Likewise, it is necessary to understand that the opponents are carrying out this same reading process and that the unpredictability of motor conducts is fundamental for success in game situations.

Thus, in cycle 3, students understand that decisions taken in game situations materialize concretely in specific game actions and that to overcome these conditions imposed by internal logic, specific development of certain points of motor actions is necessary. It is possible to build an understanding that game actions (technical) are a response directly linked to game situations and that they need to be developed in order to advance. The teacher can develop these motor actions linking them to game situations or emphasizing them as a priority if the complexity of assimilating the technique is high to be developed directly in game situations. With the appropriation of these new ways of interacting, students will be able to experience new and more complex situations in the dynamics of the game, resuming the cycle from its beginning.

The use of these proposed Cycles consists in giving emphasis in the didactic-methodological actions, which will be destined to develop each one of these aspects with greater or lesser specificity in each cycle. That is, the same didactic structure, depending on its characteristics, can be developed in any of the three cycles, its specificity being defined by the objective established in each motor situation (understanding of the game logic, decision-making development or motor action qualification). The main difference that punctuates the specificity of the cycle is linked to the aims established, the characteristics of the proposed activities and the direction of the instructions given by the teacher, considering the context and the group characteristics in question. It is argued that with this knowledge of Motor Praxiology about internal logic, the teacher has more specific tools of game dynamics to develop students' understanding and can provide a teaching connected with what happens in the game, helping them to better comprehend it.

6 CONCLUSION

Starting from same TGfU premise, the Teaching for Understanding Internal Logic aims to teach to understand the sports' internal logic, based on Motor Praxiology concepts, guiding the teaching-learning process aimed at developing the capacity to identify, analyze and interact from the internal logic inner elements. For this construction, it was proposed to start from players and environment relation, as guiding elements of the teaching-learning process and also was established specific cycles to guide the teachers' pedagogical practices in this Teaching for Understanding Internal Logic perspective. Thereby, the pedagogical principles and the praxiological knowledge could help the teachers to manage the activities proposed in classes or training sessions with more rigorously based on the specifics of the internal logic of the sport in question. Research on Teaching Games for Understanding and Motor Praxiology indicated the possibility of systematizing more specific knowledge from the

Teaching for Understanding Internal Logic perspective, which may be constituted from new studies, especially with experimental results about the effects of this propose in the students' motor conduct and teachers' pedagogical practices.

REFERENCES

ARAÚJO, Pablo; FRANCHI, Silvester; LAVEGA-BURGUÉS, Pere. Praxiologia motriz: educação física como educação das condutas motrizes. **Conexões***:* Educ. Fís., Esporte e Saúde, v. 18, p. 1-14, 2020. DOI: https://doi.org/10.20396/conex.v18i0.8659531

BOLONHINI, Sabine Zink; PAES, Roberto Rodrigues. A Proposta Pedagógica do Teaching Games for Understanding: Reflexões Sobre A Iniciação Esportiva. **Pensar a Prática,** v. 12, n. 1, p. 1-6, 2009. DOI: https://doi.org/10.5216/rpp.v12i2.5694

BUNKER, David; THORPE, Rod. "A Model for the Teaching of Games in Secondary Schools." **Bulletin of Physical Education**, v. 18, n.1, p. 5–8, 1982.

BUNKER, David; THORPE, Rod. The Curriculum Model. *In:* THORPE, R., BUNKER, D., AND ALMOND, L. (Ed.) **Rethinking games teaching**. Loughborough: University of Technology, 1986. p. 7-10.

CLEMENTE, Filipe Manuel. Pedagogical principles of teaching games for understanding and nonlinear pedagogy in the physical education teaching. Movimento (Porto Alegre), v. 18, n. 2, p. 315-335, 2012. DOI: https://doi.org/10.22456/1982-8918.27495

CLEMENTE, Filipe Manuel. An Integrate Vision of the Teaching Games. **Revista Brasileira de Ciência do Esporte**, v. 36, n. 2, p. 587-601, 2014.

COSTA, Israel Teoldo; GRECO, Pablo Juan; MESQUITA, Isabel; GRAÇA, Amândio; GARGANTA, Julio Manuel da Silva. O Teaching Games For Understanding (TGfU) como Modelo De Ensino Dos Jogos Desportivos Coletivos. **Revista Palestra**, v. 10, p. 69-77, 2010.

DEMO, Pedro. **Metodologia Científica em Ciências Sociais**. São Paulo: Atlas, 1995.

DEMO, Pedro. **Metodologia do Conhecimento Científico**. São Paulo: Atlas, 2000.

FAGUNDES, Felipe Menezes. **Articulações iniciais entre a Praxiologia Motriz e o método Teaching Games for Understanding**: revendo conceitos do ensino para compreensão. 2017. 51 f. Trabalho de Conclusão de Curso (Graduação em Educação Física) – Universidade Federal de Santa Maria, Santa Maria, RS, 2017.

FAGUNDES, Felipe Menezes; RIBAS, João Francisco Magno. A dinâmica do voleibol sob as lentes da Praxiologia motriz: uma análise praxiológica do levantamento. **Revista Brasileira de Ciência & Movimento**, v. 25, n. 3, p. 134-149, 2017.

GALATTI, Larissa Rafaela *et al*. Pedagogia do esporte: procedimentos pedagógicos aplicados aos jogos esportivos coletivos. **Conexões**, v. 6, p. 397-408, 2008.

GAMBOA, Silvio Sánchez. **Pesquisa em educação:** Métodos e Epistemologias. Chapecó: Argos, 2007.

GARGANTA, Julio. Para Uma Teoria Dos Jogos Desportivos Colectivos. *In*: GRAÇA, A.; OLIVEIRA, J. (Org.). **O ensino dos jogos desportivos**. Porto: Universidade do Porto, 1998. v. 3, p. 11-26.

GIL, Antonio Carlos. **Métodos e** Técnicas **de Pesquisa Social**. São Paulo: Atlas, 2008.

GRAÇA, Amândio; MESQUITA, Isabel. A Investigação Sobre os Modelos de Ensino dos Jogos Desportivos. **Revista Portuguesa de Ciência do Desporto,** v. 7, n.3, p. 401-421, 2007.

GRIFFIN, Linda; OSLIN, Judith.; MITCHELL, Stephen. A. An analysis of two instructional approaches to teaching net games. **Research Quarterly for Exercise and Sport,** p. 65-66, 1995.

HOLT, Nicholas; STREAN, William; BENGOECHEA, Enrique García. Expanding the teaching games for understanding model: new avenues for future research and practice. **Journal of Teaching in Physical Education**, v. 21, n. 2, p. 162-176, 2002.

HOPPER, Tim. Teaching games for understanding: The importance of student emphasis over content emphasis. **Journal of Physical Education, Recreation & Dance**, v. 73, n. 7, p. 44-48, 2002.

KIRK, David; MACPHAIL, Ann. Teaching games for understanding and situated learning: Rethinking the Bunker-Thorpe model. **Journal of teaching in Physical Education**, v. 21, n. 2, p. 177-192, 2002.

LAGARDERA, Francisco; LAVEGA, Pere. **Introducción a la praxiología motriz**. Barcelona: Paidotribo, 2003.

LEÃO, Denise Maria Maciel. Paradigmas contemporâneos de educação: escola tradicional e escola construtivista. **Cadernos de pesquisa**, p. 187-206, jul. 1999. https://doi.org/10.1590/S0100-15741999000200008

MARTÍNEZ-SANTOS, Raul; FOUNAUD, María Pilar; ARACAMA, Astrid.; OIARBIDE, Asier. Sports Teaching, Traditional Games, and Understanding in Physical Education: A Tale of Two Stories. **Frontiers in Psychology**, v. 11, p. 2312, sept.2020. DOI: https://doi.org/10.3389/fpsyg.2020.581721

PARLEBAS, Pierre. **Elementos de Sociología del Deporte.** Málaga: Junta de Andalucía y Universidad Internacional Deportiva de Andalucía,. 1988.

PARLEBAS, Pierre. **Léxico de praxiología motriz**. Barcelona: Paidotribo, 2001.

PARLEBAS, Pierre. A pedagogy of motor skills. **Acción Motriz**, v. 20, p. 89–95, 2017.

PARLEBAS, Pierre. The universals of games and sports. **Frontiers in Psychology**, v. 11, p. 2583, 2020. DOI: https://doi.org/10.3389/fpsyg.2020.593877

RIBAS, João Francisco Magno (Ed.). **Praxiologia motriz e voleibol:** elementos para o trabalho pedagógico. Ijuí: Editora Unijuí, 2014.

RIBAS, João Francisco Magno; LANES, Bruno Minuzzi; FAGUNDES, Felipe Menezes; BORDINHÃO, Lidiane Soares; FOLLMANN, Natiele; OLIVEIRA, Raquel Valente de; SCHMIDT, Vagner Augusto de Oliveira; BITENCOURT, William Daniel. Aproximações da praxiologia motriz com o conceito de organização interna na Base Nacional Comum Curricular - Educação Física. **Pensar a Prática** v. 22, 2019. Disponível em: https://www.revistas.ufg.br/fef/article/view/54331. Acesso em: 9 jul. 2021. DOI: https://doi.org/ 10.5216/rpp.v22.54331

RICHARDSON, Roberto Jerrry. **Pesquisa social:** métodos e técnicas. São Paulo: Atlas, 2012.

SALVADOR, Ângelo Domingos. **Métodos e** Técnicas **de Pesquisa Bibliográfica**. Porto Alegre: Sulina, 1986.

SÁNCHEZ-GÓMEZ, Roberto; DEVÍS-DEVÍS, José; NAVARRO-ADELANTADO, Vicente. El Modelo Teaching Games For Understanding en el Contexto Internacional y Español: Una Perspectiva Histórica. Ágora: para la Educación Física y el deporte, v. 16, n. 3, p. 197-213, 2014.

SCAGLIA, Alcides José; REVERDITO, Riller Silva; GALATTI, Larissa Rafaela. Ambiente de jogo e ambiente de aprendizagem no processo de ensino dos jogos esportivos coletivos: desafios no ensino e aprendizagem dos jogos esportivos coletivos. **Jogos desportivos: formação e investigação,** v. 4, p. 133-170, 2013.

STOLZ, Steven; PILL, Shane. Teaching games and sport for understanding: Exploring and reconsidering its relevance in physical education. **European Physical Education Review**, v. 20, n. 1, p. 36-71, 2014.

TAN, Clara Wee Keat; CHOW, Jia Yi; DAVIDS, Keith. 'How does TGfU work?': examining the relationship between learning design in TGfU and a nonlinear pedagogy. **Physical education and sport pedagogy**, v. 17, n. 4, p. 331-348, 2012.

THORPE, Rod; BUNKER, David; ALMOND, Len. **Rethinking games teaching**. Loughborough: University of Technology, 1986.

TSUKAMOTO, Mariana; ANDRADE, Diego de. Formação inicial em Educação Física e Teaching Games for Understanding: Percepções dos estudantes. **Revista Portuguesa de Ciências do Desporto,** v. 17, p. 99-106, 2017. DOI: https://doi.org/10.5628/rpcd.17.S1A.99

WEBB, Paul; PEARSON, Philip; FORREST, Greg**. Teaching Games for Understanding (TGfU) in Primary and Secondary Physical Education**. *In:* INTERNATIONAL CONFERENCE FOR HEALTH, PHYSICAL EDUCATION, RECREATION, SPORT AND DANCE**,** 1st, 2006. Available at: https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1075&context=edupapers

Resumo: Este ensaio teve por objetivo propor uma perspectiva de Ensino para Compreensão da Lógica Interna dos esportes a partir da estrutura metodológica do *Teaching Games for Understanding* (TGfU) e dos conhecimentos sobre lógica interna da Praxiologia Motriz. Considerando critérios específicos para revisão de literatura, foram selecionados 18 artigos que subsidiaram a discussão teórica. Foram apresentados aspectos metodológicos do TGfU e os principais conceitos da Praxiologia Motriz, que possibilitaram a articulação teórica proposta neste ensaio. Como principais contribuições da perspectiva de Ensino para Compreensão da Lógica Interna, foram estruturadas ferramentas didáticas para mediação do processo de ensino-aprendizagem a partir da relação sujeito/ambiente. Além disso, foi proposta uma sistematização metodológica para organização da prática pedagógica para desenvolvimento do Ensino para Compreensão da Lógica Interna. Por fim, contextualiza-se a necessidade de novos estudos que busquem identificar como essa perspectiva auxilia professores no processo de ensino-aprendizagem dos esportes.

Palavras-chave: Ensino. Jogos recreativos. Esportes. Revisão..

Resumen: Este ensayo tuvo como objetivo proponer una perspectiva de Enseñanza para la Comprensión de la Lógica Interna de los deportes a partir de la estructura metodológica del Teaching Games for Understanding (TGfU) y de los conocimientos sobre lógica interna de la Praxiología Motriz. Con criterios específicos para revisión de literatura, se seleccionaron 18 artículos que sustentaron la discusión teórica. Se presentaron aspectos metodológicos de TGfU y los principales conceptos de la Praxiología Motriz, que posibilitaron la articulación teórica propuesta en este ensayo. Como principales aportes de la perspectiva de Enseñanza para Comprensión de la Lógica Interna se estructuraron herramientas didácticas para mediar el proceso de enseñanza/aprendizaje partiendo de la relación sujeto/entorno. Además, se propuso una sistematización metodológica para organizar la práctica pedagógica para el desarrollo de la Enseñanza para la Comprensión de la Lógica Interna. Finalmente, se contextualiza la necesidad de nuevos estudios que busquen identificar cómo esta perspectiva ayuda a los docentes en el proceso de enseñanza-aprendizaje de los deportes.

Palabras clave: Enseñanza. Juegos recreativos. Deportes. Revisión.

CONFLICT OF INTERESTS

The authors have declared that this work involves no conflict of interest.

AUTHORS' CONTRIBUTIONS

Felipe Menezes-Fagundes: Elaboration of the initial text, theoretical and grammar revisions and elaboration of advances for the final version of the text, manuscript formatting and submission to the journal.

João Francisco Magno Ribas: Supervision of the preparation of the initial text, theoretical and grammar revisions and development of advances for the final version of the text.

Cristòfol Salas-Santandreu: Theoretical supervision and grammar revisions and elaboration of advances for the final version of the text.

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