SPORT PEDAGOGY / COACHING

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Judo teaching through games: systematic organization according to the principles of complex games networks

Abstract

Background. Although the rules of judo are constantly being transformed its teaching still uses analytical training that, as a result, intervene in the comprehension process of this modality. It is therefore necessary to elaborate an appropriate pedagogical proposal for teaching it in an introduction to the sport.

Objectives. The aim of this study is to present a systematic pedagogical proposal, through a complex network using games as the main teaching strategy, in initiation to the sport of judo.

Methods. This approach utilizes games as a teaching strategy, organized in functional units, as well as systemizing judo through a network.

Results. A coach who understands this pedagogical proposal and builds, games that prioritize functional judo principles from the network in an appropriate sequence, may give opportunities and many benefits to judo players.

Conclusions. It is possible to conclude that this pedagogical proposal can be expanded to other teaching stages including; late introduction; expertise and high sports performance. However, it depends on the organisation of the network in functional units and on the games proposed by coaches.

Introduction

Contemporary sports are marked by the speed and volume of changes that are attributed to them. This fact has been occurring with enormous frequency, especially in judo, with changes in its rules in recent years [Hirama *et al.* 2014; Lopes *et al.* 2016; Calmet *et al.* 2017]. These changes generate the need to present pedagogical proposals to coaches and practitioners, to contribute to teaching of this fight on how to follow its evolution, as well as the training and specialization of young athletes [Martins *et al.* 2019; Olivio Junior, Drigo 2019].

However, even with constant transformations, judo still uses analytical training in sports introduction process [Adam, Smaruj, Tyszkowski 2011; Mesquita 2014; Olivio Junior, Drigo 2018], which values movements using exhaustive repetitions, submitting the practitioner to long sessions of certain exercises [Paes 2006; Galatti, Cirino, Scaglia 2015]. Moreover, these trainings are developed equally to adults and children, disrespecting the practitioner's whole development and interrupting the learning process [Paes 2006; Galatti, Cirino, Scaglia 2015]. In this context, it is worth highlighting this situation generates the need to create pedagogical proposals that may contribute to the development of judo practitioners in all spheres, from the introduction to sports performance, presenting consistency between training process and its phases. It also contributes to their sports career, when athletes are searching for systematizing their broad content and to develop creative and auton-

omous practitioners [Lopes *et al.* 2016; Olivio Junior, Drigo 2019].

When we understand these spheres, in introduction and high-performance sports, it is relevant to outline pedagogical proposals that seek effectiveness of judo principles, focused on the dimensions of the attitudinal conceptual and procedural contents, promoting a suitable practice, to break with the reductionist models that still prevail [Cirino, Pereira, Scaglia 2013]. Thus, Sport Pedagogy, considered a discipline that aims at studying the teaching process of sports manifestations, tends to corroborate with significant and coherent changes to the suitable teaching of sports, including judo [Galatti *et al.*, 2014]. The practitioner can have a comprehension of judo according to a game, as the strategy to achieve the contents of this fight [Freire 2002; Galatti, Cirino, Scaglia 2015].

With this in mind, a game as a pedagogical strategy for judo teaching makes it possible, because of its degree of complexity and a transfer of ability from a game situation to another, relating it to combat and the fight itself [Leonardo, Scaglia, Reverdito 2009; Galatti, Cirino, Scaglia 2015; Olivio Junior, Drigo 2015].

The game phenomenon, defined as a free activity, has pre-established space, time and rules, contains a character of suspending reality through fiction, and presents a prevalence of uncertainty once its development and its end are not determined [Caillois 1990]. Moreover, games as a strategy for teaching judo may contemplate a fight as a whole running through movements and separate techniques.

Based on the definition of the game, the recognition of its relevance in the process of teaching judo to enable training that includes judo in its entirety (not fragmenting it into parts) and to enhance the practitioner's ability to solve the problem situations that emerge during the game, this study aimed to present a pedagogical proposal systematized through a complex network that uses the game as the main teaching strategy in the sports initiation of judo.

Epistemological basis of the proposal

Education is based on several theories. Three of them are used here as they provide subsidies for the teaching and learning processes in different contexts. These theories named: innatist, empiricist, and interactionist, support the understanding of the world by different approaches to arrive at some knowledge. The innate theory presents a conception based on the perspective that knowledge comes biologically from the human being, the innate, without empirical verification. In contrast, the empiricist theory supports the conception that knowledge comes only from life experience, where the human being is an empty container that needs to be filled with knowledge deemed important. In an inverse perspective to previous theories, the interactionist conceives that knowledge comes from interactions between human beings and the environment, conditioned by social and cultural interaction [Mizukami 1986].

These theories present different approaches, such as the ones supported by the type of knowledge that each determines. Among the different approaches, one can refer to an ecological approach, based on interactionist theory and systemic thinking [Bertalanffy 1974] and complex [Morin 1991], which is not a paradigm of human development through medical interrelationships, environment or task [Bronfenbrenner 1979].

For an understanding of systemic thinking, one must think about transdisciplinarity, breaking an idea of what science is, based on the principle of simplicity, which can attribute an idea of a new paradigm in science. As an example, it is noted how they are analyzed as things, always by the principle of fragmentation of parts, for an understanding of the whole [Bertalanffy 1974]. This logic of always being available in parts, generates an illusion of understanding, as it results in partiality of knowledge. In this sense, one can conceive a system as a complex of elements in interaction, starting from all over to obtain an understanding of determined knowledge. Therefore, a system can be understood by the interactions of its components in constant regulations 002].

Then, complex thinking also allows for the simplicity of things, in addition to determinism and order, since the principle of complexity is a set of events in constant interaction. Furthermore, an organization and an analysis of knowledge must be guided by the idea of self-organization, in which each part is not being carried out, as the rest is in each of the parts and operated reciprocally [Morin 1991].

In view of systemic and complex thinking, both break with the simplicity paradigm and, in this case, thinking about the individual and the environment, they cannot isolate the individual in a task that is out of context in the environment, as knowledge must be used as interrelationships in a process of automatic organization of all the components of the determined complex system. As characteristics of the interior of the complex system, they are interdependent and ordered and disordered, thinking of the multiple relationships among different environments [Vasconcellos 2002].

This environment can be understood by systems and consists of tasks of different types of behavior, interpersonal structures, and roles established by the individual. Furthermore, relationships are established through exchanges under the influence of the environment and social life, consequently, the human being in this approach is always active and in constant development [Bronfenbrenner 1979].

In the sports context, specifically in judo, these theories of knowledge are active in the teaching and learning processes. It is noticeable that a class based on innate

theory, being judoka, who stands out before others, is attributed to be gifted, in the understanding that he/she was born biologically to emerge in this sport, with this knowledge tied to the innate. Considering the study by Rufino [2012], when he observed the classes of four types of fights, including judo, the main characteristic of the classes was the traditional teaching method focused only on technical execution, repeated in an exhaustive and decontextualized way of combat and taught in a very similar way to adults and children. Thus, it is possible to infer that traditional judo classes reflect the characteristics of empiric theory, in which the figure of the teacher holds the knowledge and the student becomes only a reproducer of techniques. Therefore, during the class, the student represents the figure that needs to be filled by the knowledge-centered on the teacher.

Among these nuances, an ecological approach, supported by systemic and complex thinking, can be an alternative to knowledge, in the case of a judgment, it can be created using the individual's interrelations with the environment. To this end, it requires pedagogical procedures to obtain the protagonism of the student and attend the student's relations with the judge, being carried out by colleagues, teachers, tasks, objects, and activity rules.

Aiming to meet an ecological approach in the context of judo, the game, a polysemic phenomenon, investigated by different areas of knowledge, emerges as a tactic pedagogical strategy. In this sense, Huizinga [2000] mentioned the predominant game for voluntary and temporary activity, including time, space, and pre-selected rules. In the game, there are some fundamental features like freedom from a suspension of reality, feelings of tension, and uncertainty, in addition to absorbing the players intensely.

Accordingly, Caillois [1990] defines the game as a free, justified activity that the player should not be obliged to play, as the game would lose its most valuable asset, joy; bounded by space and time; uncertain as the outcome, and the outcome cannot be determined; unproductive, without generating any good or wealth; regulated by rules, and fictional, stipulated by a suspension of reality. Furthermore, Caillois [1990] understands that these elements are fundamental for the game to exist and contribute to the existence of benefits that allow it to enter its domain.

In the sports context, the game as a teaching strategy can be presented in proposals, such as the Collective Sports Games (JDC) [Garganta 1998, 2004], in which team sports are taught from the game, being structured by solutions to problems that the game presents and technical-tactical notions of team sports. The Sport Education model [Siedentop, 1994], aims through the game, to enable students to have a significant sporting experience. In the school scenario, this proposal allows the inclusion of many students because it does not prioritize gestural reproduction, but the experience of each one, considering the established game situations and the

roles as referees, coaches, and organizers of sports festivals. Another similar proposal is the Teaching Games for Understanding [Bunker, Thorpe 1982], which systematizes sports classes by reduced games that contain all the technical-tactical elements of the game in their formality and prioritize problem situations and questions to students throughout the teaching process.

Even with these models of teaching collective sports games, there are still applications that use the game to play other content, in addition to sport, as proposed by Scaglia [2007], which exposes the content of Physical Education to be taught by a methodology based on the game, being related by games/games, games/sports, games/dances, games/fights, and games/gymnastics. This proposal starts with the idea of Wittgenstein [1996], about a relationship of games in language, relating the game to the concept of family, thus, all these contents are formed by a grouping of games systematized by their characteristics and similarities. Pereira *et al.* [2016] described a proposal for teaching physical education in elementary school, confirming with a family idea, in which all content related to motor and cognitive skills and relationships are transferred from one container to another, from one game to another, at different levels of structure and complexity.

Given the context presented, there is still a need to organize the content of judo, and the theory of complex networks can be used, similar to the proposal by Wittgenstein [1996], epistemologically the complex networks extend through studies focused on Sociology, aiming at investigating the interaction behavior of human beings in society. In this sense, complex networks seek to investigate the type of connection between human beings and the world through different types of relationships established with the environment and with people [Wellman 1985].

The theory of complex networks is directed towards meeting the characteristics of the ecological approach, thus being able to use this theory in the context of judo to organize the contents to be worked in the ecological perspective, using the game as a teaching strategy. This perspective has already been suggested by Pereira *et al.* [2016], in the organization of game content for School Physical Education in the form of complex networks. Furthermore, the consolidation of a pedagogical proposal, with theoretical deepening, seeks to break paradigms of judo classes focused on innate and empiric theories and favors the diversified construction of new teaching methods and the development of students encouraged to be protagonists, creative and autonomous.

Pedagogical proposal through complex games networks

This pedagogical proposal of teaching judo in sports introduction is based on principles of Sport Pedagogy

Figure 1. Judo Games Network.
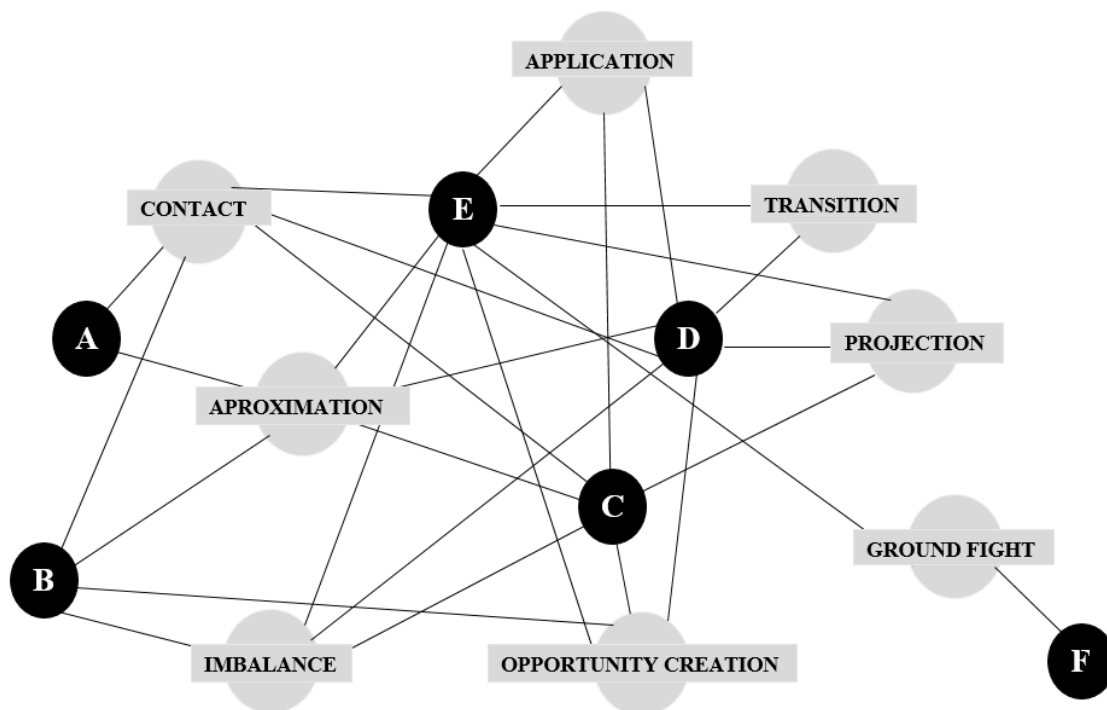
[Paes 2006; Gomes *et al.* 2010; Cirino, Pereira, Scaglia 2013; Galatti, Cirino, Scaglia 2015] and has games as teaching strategy [Freire 2002]. Also, as theoretical referential, studies that searched to identify the interactions among game situations were utilized, expressing the complexity of diverse modalities of opposition [Reverdito, Scaglia 2007; Travassos *et al.* 2010; Scaglia *et al.* 2013; Travassos *et al.* 2013].

The use of games is based on functional units of judo, namely standing fight (approach, contact, opportunity creation, imbalance, application, and projection) and ground fight (transition and ground fight) [Olivio Junior, Drigo 2015]. Besides, content and games organization are represented by a game network of judo (figure 1), abstractly. Its organizational system presents functional units in large spheres, games in smaller spheres, and a set of connections that represent interactions among the elements.

The representation of this proposal in a network format is composed by games that form the spheres with letters A to F with different levels of complexity and with combat functional units that relate the levels with the complexity of games and its contests, according to the number of network connections [Leonardo, Scaglia, Reverdito 2009; Pereira *et al.* 2016].

Game A, for example, that presents two connections, would be a less complex approach game. More complex variations are games B and C. This game A could be a game in which a fighter has the goal to approximate to his opponent in a pre-defined set (fight area) and his opponent has the goal of not letting the fighter approach.

As a variation option to this game A, there is game B, with greater complexity, which could aim, besides the approximation, the two fighters making contact with each other (the grip fighting on kimono), and they should find a better grip fighting to dominate the opponent.

In contrast, the game E, which presents ten connections, is a more complex game, containing eight functional units, namely approach, contact, creation of opportunity, projection, ground fight, transition, application, and imbalance. For instance, it could be a game in which two fighters in a determined time need to perform the grip fighting to dominate the opponent and thus, to create moving situations to make the maximum of blows and projections. Table 1 exemplifies possible games according to functional units, following the complexity illustrated in network connections.

It is important to emphasize that these are just examples to illustrate the variation of games that seek the act of fighting, avoiding excessive reproductions, and prioritizing the fight for game situations, in which fighters need to develop strategies to solve existing situation-problems. This proposal also favors judo teaching according to the dimensions of the attitudinal, conceptual, and procedural contents [Cirino, Pereira, Scaglia 2013; Pereira *et al.* 2017].

In the attitudinal dimension, the emphasis is focused on valuing moral and ethical attitudes with peers. The conceptual dimension focuses on the historical context of the modality and the attention to the continuous changes of the rules. In accord with the other dimensions, procedural dimension consists of a game itself, aiming at the

Table 1. Possible games according to a complex network.

Classification	Functional Units	Description
Game A	Approach, Contact	Touch game: Divided in pairs, the players should try to touch established parts of the opponent's body. These parts correspond to the places where judo grip fighting is held including: shoulders, back, arms and trunk.
Game B	Approach, contact, Creation of opportunity and imbalance	*Kumi-kata* with movement: Distributed in pairs, with a predefined set, the players aim to perform *kumi-kata* and to try to take the opponent out of the demarcated area.
Game C	Approximation, contact, opportunity creation, imbalance, application and projection	*Kumi-kata* with opponent neutralization followed by projection technique: Distributed in pairs, with a fixed time of one minute, the players should perform the grip fighting, neutralize the opponent, and as soon as there is no reaction, to perform the blow.
Game D	Approximation, contact, opportunity creation, imbalance, application, projection and transition	Variation of the Game C with a transition to the ground: Distributed in pairs, the players will have the variation of the previous game with a greater degree of complexity. The *tatami* mat will be divided into two areas, and the players start in the central area, seeking to move their opponent to the other area, being able to perform the technique. After the technique established with a positive result (opponent falling on the back) or a negative result (opponent falling on the stomach), the transition will have to be immediately performed in a sequence in which will aim the ground fight, for example, as a technique that it will progress to an immobilization.
Game E	Approximation, contact, opportunity creation, imbalance, application, projection, transition and ground fight	*Randori* with a number of attacks: Distributed in pairs and with a time of 30 minutes, the players will perform effectively at least one blow and they will give sequence to the ground fight.
Game F	Ground Fight	Fight of immobilizations: Distributed in pairs, one player starts lying face down and the other is standing. The game presents different objectives for each one. The player that starts standing should try to immobilize the opponent in 30 seconds. On the other hand, the other, that starts lying face down, aims to resist the 30 seconds without being immobilized.

interaction of judo content by the act of fighting [Darido 2001; Barroso, Darido 2009; Swider 2018].

The pedagogical proposal presented tends to value games as a strategy for teaching fights, since a game for its systemic characteristics approaches functional units of judo in a complex way, without fragmenting the fight in parts [Leonardo, Scaglia, Reverdito 2009; Pereira *et al.* 2016]. Thus, this method provides an understanding of judo fight based on situation-problems resulting from the fight [Galatti, Cirino, Scaglia 2015].

Systemic characteristics of games also favor the connections among the three dimensions of the content, namely conceptual, attitudinal and procedural. Conceptual contents are related to the act of fighting, in other words, functional units and actions used to solve situation-problems of combat. Attitudinal contents refer to cultural, historical, philosophical aspects and its meanings from the origin of judo to its present manifestations. These contents favor the appreciation and stimulation of positive attitudes and values of judo, considering the player as a member who belongs to society. In turn, procedural contents are the pedagogical instruments used for judo teaching. In this case, all games and all inter-

ventions are used to enable the players to reflect on their practice and, consequently, on the construction of their autonomy [Darido 2001; Barroso, Darido 2009; Cirino, Pereira, Scaglia 2013; Pereira *et al.* 2017].

The pedagogical organization, using games, systematizes itself in the form of an abstract network that aims at the relationships of its components. Furthermore, this network is used to represent the interaction between games and functional units, demonstrating the complexity of a game. In this perspective, the network presents a model of non-linear judo teaching, but which points to connections among games, softening the choice of the game sequence, according to the performance of the player.

This network contemplates functional units, that characterize the moments of the fight as a whole, divided in the part when the players start the fight standing by approximation, in which contact occurs, generating the creation of opportunity through the imbalance and the application of the opponent technique and projection, with the transition to the ground fight or not [Olivio Junior, Drigo 2015]. They are also developed from games in several degrees of structuring and complexity, in which

Table 2. Comparison between judo teaching methods.

Traditional judo teaching	Judo teaching through games
The coach at the center of the teaching process and the player as an executor of tasks.	The player at the center of the teaching process and the coach as a mediator.
Teaching directed to gestural reproduction, correct execution of the technique using exhaustive and isolated repetitions.	The player is encouraged to solve situations or problems that emerge during a game. It prioritizes the creativity and autonomy of the player throughout the training.
The coach makes the decisions for the players. The techniques presented are usually isolated, becoming predictable.	Games that enrich the movements of the players.
Training usually divided into warming up (running and traditional aerobic exercises), falls (bearings and damping exercises on a tatami mat), blows (repetitions of blows, with or without projections) and *randori* (combat standing and/or on the ground).	Systematized training, presenting games that help an integral development of the player. Organized by situation-problems that aim to understand the fight and also cover dimensions of the contents, relating them to judo principles, enhancing the player's training.

the player will be confronted by an environment with situation-problems.

Finally, the systematization of this pedagogical proposal is established by the network of Judo games, demonstrating the interactions by games similarities and characteristics for the teaching of fight contents. In this context, contrasting the traditional method of judo teaching, this proposition opens a range of teaching possibilities, respecting the levels of comprehension and autonomy of players by allowing their participation in the choice of direction, teaching process, and learning. Therefore, Table 2 presents the characteristics of traditional judo teaching methodologies compared to this pedagogical proposal, which uses games to represent the systemic characteristics of the judo fight.

The comparison between the two methods reflects the advantages of judo teaching through games, by stimulating creativity from situation-problems, expanding the player's movement repertoire, which can positively be reflected in their fighting performance. Also, it enables them an understanding of the act of fighting, instead of only executing isolated techniques of judo as it happens in traditional methods which prioritize analytical and fragmented forms of teaching, making the players dependent and sole executors of tasks requested by their trainer. A coach who understands this pedagogical proposal and builds, from the network, games that prioritize functional judo principles in an appropriate sequence, may give opportunities and many benefits to judo players. Also, coaches can contribute to their practice and experience as a coach of a modality rich in training strategies, that cannot be limited only to reductionist practices.

Conclusions

The potential of this teaching proposal in initiation into the sport may be inferred by using the systematization achieved through the network, and by organizing the judo content using the functional units through through games. Through problem-situations emerging during the

game the judo practitioners have an understanding of the struggle, thus favoring their conscious decision-making.

This systematization, as opposed to the traditional method of teaching judo, gives the coach the role of mediator in the teaching process. Although the practitioner is at the center of this process, the importance of the coach is in the development of the training. It is up to him or her to devise fighting situations, contextualize training and discuss the practitioners' actions, instead of simply limiting themselves to teaching fragmented judo techniques. In addition, as this is a flexible proposal, it will enable the coach to adapt it to the context in which it is used and by this, measure the level of complexity of the games according to the performance of the practitioners. In this scenario, based on an ecological approach, it allows the student to understand the reason for his or her actions at the moment of combat, expanding their understanding of the fight both in relation to the environment and the opponent.

This systematization using a complex network allows for the non-linear organization of the teaching processes of judo contents, presenting itself as an adaptive and random system capable of considering the needs of the students and taking advantage of their previous knowledge. Thus, it can be concluded that the presented pedagogical proposal can be adapted to other teaching phases, both in late initiation, in specialization, and in high-level sports performance, while respecting the behavior of the functional units for each teaching phase and the games proposed by the coaches.

References

1. Adam M., Smaruj M., Tyszkowski S. (2011), *The diagnosis of the technical-tactical preparation of judo competitors during the World Championships (2009 and 2010) in the light of the new judo sport rules*, "Archives of Budo", vol. 7, no. 1, pp. 5-9.

2. Barroso A., Darido S. (2009), *Sport Pedagogy and content dimensions: conceptual, procedural and attitudinal*, "Jour-

nal of Physical Education", vol. 20, no. 2, pp. 281-289 [in Portuguese].

3. Bertalanffy L. (1976), *General System Theory*, Revised Edition, Cambridge.

4. Bronfenbrenner U. (1979), *The ecology of human development: experiments by nature and design*, Harvard University Press, Cambridge.

5. Bunker D., Thorpe R. (1982), *A model for the teaching of games in the secondary school*, "Bulletin of Physical Education", vol. 10, no. 1, pp. 9-16.

6. Caillois R. (1990), *Games and men: the mask and the vertigo*, Cotovia, Lisboa [in Portuguese].

7. Calmet M., Pierantozzi E., Sterkowicz S., Takito M., Franchini E. (2017), *Judo rules: searching for a wind of changes*, "International Journal of Performance Analysis in Sport", vol. 17, no. 6, pp. 863-871.

8. Cirino C., Pereira M., Scaglia A. (2013), *Systematization of the content of fighting for Elementary Education: a teaching proposal based on games*, "Mineira Journal Physical Education", vol. special, no. 9, pp. 221-227 [in Portuguese].

9. Darido S. (2001), *The contents of school Physical Education: influences, trends, difficulties and possibilities*, "Perspectives in School Physical Education", vol. 2, no. 1, pp. 5-25 [in Portuguese].

10. Freire J. (2002), *The game between laughter and crying*, Associated Authors, Sao Paulo [in Portuguese].

11. Galatti L.R., Cirino C., Scaglia A.J. (2015), *Teaching methodological reflections for the sports initiation process of fights* [in:] J.V. Nascimento, E.R. Souza, V. Ramos, J.C. Schmitt [eds.], *Physical Education and Sport: converging to new paths...*, Santa Catarina State University, Florianopolis, pp. 489-511.

12. Galatti L., Reverdito R., Scaglia A., Paes R., Seoane A. (2014), *Sport Pedagogy: tension in science and the teaching of Collective Sports Games*, "Journal of Physical Education", vol. 25, no. 1, pp. 153-162.

13. Garganta J. (2004), *Knowledge and action in sports games*, "Portuguese Journal of Sport Sciences", vol. 4, pp. 55-56 [in Portuguese].

14. Garganta J. (2004), *The teaching of collective sports games: perspectives and trends*, "Movimento", vol. 8, pp. 19-27 [in Portuguese].

15. Gomes M., Morato M., Duarte E., Almeida J. (2010), *Fight teaching: from conditional principles to situational groups*, "Movimento", vol. 16, no. 2, pp. 207-227 [in Portuguese].

16. Hirama L., Joaquim C., Costa R., Montagner P. (2014), *Interactionist proposals in sport pedagogy: approaches and characteristics*, "Conexoes", vol. 12, no. 4, pp. 51-68 [in Portuguese].

17. Huizinga J. (1999), *Homo Ludens: the game as an element of culture*, Perspective, Sao Paulo [in Portuguese].

18. Leonardo L., Scaglia A., Reverdito R. (2009), *The teaching of team sports: methodology based on the family of games*, "Motriz", vol. 15, no. 2, pp. 236-246 [in Portuguese].

19. Lopes H., Vicente A., Simoes J., Vieira M., Fernando C. (2016), *The pedagogical process in combat sports*, "Journal of Sport Pedagogy and Research", vol. 2, no. 3, pp. 48-52.

20. Martins F.P., Souza L.S.D.P., Campos R.P., Bromley S.J., Takito M.Y., Franchini E. (2019), *Techniques utilized at 2017 Judo World Championship and their classification: comparisons between sexes, weight categories, winners and non-winners*, "Ido Movement for Culture. Journal of Martial Arts Anthropology", vol. 19, no. 1, pp. 58–65; doi: 10.14589/ido.19.1.6.

21. Mesquita C. (2014), *Judo... from reflection to competition: the smooth path*, Galenus, Rio de Janeiro [in Portuguese].

22. Mizukami M. (1986), *Teaching: process approaches*, EPU, Sao Paulo [in Portuguese].

23. Morin E. (1991), *Introduction to complex thinking*, Institute Piaget, Lisboa [in Portuguese].

24. Olivio Junior J., Drigo A. (2018), *Complex Judo Pedagogy 2*, Regional Council of Physical Education, Sao Paulo [in Portuguese].

25. Olivio Junior J., Tavares J., Carolos A., Resende R., Aranha A., Gonzales A., Drigo A. (2019), *Tactical Periodization: a Methodological Proposal for Young Judokas*, "Journal of Sport Pedagogy and Research", vol. 5, pp. 4-12 [in Portuguese].

26. Olivio Junior J., Drigo A.J. (2015), *Complex judo pedagogy: a handbook for grassroots coaches*. Legal World, Leme [in Portuguese].

27. Paes R. (2006), *Sport Pedagogy: contexts, evolution and perspectives*, "Brazilian Journal Physical Education and Sport", vol. 20, no. 5, pp. 171-171 [in Portuguese].

28. Pereira M., Cirino C., Correa A., Farias G. (2017), *School fighting: systematization of content through the fight games network*, "Conexoes", vol. 15, no. 3, pp. 338-348 [in Portuguese].

29. Pereira M., Farias G., Cirino C., Scaglia A. (2016), *The game as a pedagogical strategy for teaching physical education in the 5th year of elementary school I*, "Corpoconsciencia", vol. 20, no. 3, pp. 1-8 [in Portuguese].

30. Reverdito R., Scaglia A. (2007), *The management of the organizational process of the game: a methodological proposal for teaching collective sports games*, "Motriz", vol. 13, no. 1, pp. 51-63 [in Portuguese].

31. Rufino L. (2012), *Fighting Pedagogy: paths and possibilities*, Paco Editorial, Jundiai [in Portuguese].

32. Scaglia A. (2007), *Curriculum Reference of Basic Education of Public Schools in Franca*, Franca, Sao Paulo [in Portuguese].

33. Scaglia A., Reverdito R., Leonardo L., Lizana C. (2013), *The teaching of collective sports games: the essential competences and the logic of the game in the middle of the systemic organizational process*, "Movimento", vol. 19, no. 4, pp. 227-249 [in Portuguese].

34. Siedentop D. (1994), *Sport Education: quality PE through positive Sport experiences*, Human Kinects, New Milford.

35. Swider P. (2018), *Aikido and Judo in teaching of shihan Wojciech J. Cynarski*, "Ido Movement for Culture. Journal of Martial Arts Anthropology", vol. 18, no. 1, pp. 08–14; doi: 10.14589/ido.18.1.2.

36. Travassos B., Araujo D., Correia V., Esteves P. (2010), *Eco-Dynamics Approach to the study of Team Sports Performance*, "The Open Sports Sciences Journal", vol. 3, pp. 56-57.

37. Travassos B., Araujo D., Davids K., O´Hara K. (2013), *Expertise effects on decision-making in sport are constrained by requisite response behaviours–A meta-analysis*, "Psychology of Sport and Exercise", vol. 14, pp. 211-219.

38. Vasconcellos M. (2002), *Systemic thinking: The new paradigm of science*, Papirus, Campinas [in Portuguese].

39. Wellman B. (1985), *Studying personal communities: social structure and network analysis*, Sage, Beverly Hills.

40. Wittgenstein L. (1996), *Philosophical investigations,* New Culture, Sao Paulo [in Portuguese].

Nauczanie judo przez gry: systematyczna organizacja zgodnie z zasadami złożonych sieci gier

Słowa kluczowe: sztuki walki, sporty walki, judo, edukacja

Streszczenie

Tło. Chociaż judo przechodzi ciągłe zmiany w swoich zasadach, jego nauczanie nadal wykorzystuje trening analityczny, który w konsekwencji ingeruje w proces rozumienia tej modalności. Dlatego też konieczne jest opracowanie odpowiedniej propozycji pedagogicznej do wstępnego nauczania judo.

Cele. Celem niniejszego opracowania jest przedstawienie systematycznej propozycji pedagogicznej, poprzez złożoną sieć wykorzystującą gry jako główną strategię nauczania, we wstępnej fazie nauczania judo.

Metody. Podejście to wykorzystuje gry jako strategię nauczania, zorganizowaną w jednostki funkcjonalne, oprócz usystematyzowania judo.

Wyniki. Trener, który rozumie niniejszą propozycję pedagogiczną i buduje sieć gier, w których priorytetem są zasady funkcjonalnego judo ułożone w odpowiedniej kolejności, może zapewnić zawodnikom wiele możliwości i korzyści.

Wnioski. Na podstawie przeprowadzonych badań można wywnioskować, że opisaną propozycję pedagogiczną można rozszerzyć na inne etapy nauczania, takie jak późne wprowadzenie, biegłość/zaawansowanie i wysokie wyniki sportowe. Zależy to jednak od usystematyzowania sieci według jednostek funkcjonalnych i gier proponowanych przez trenerów.