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Review article


## Psycho-pedagogical characterization of the process of initiation in chess from the perspective of the basic elements

Caracterización psicopedagógica del proceso de iniciación en ajedrez desde la perspectiva de los elementos básicos

Caracterização psicopedagógica do processo de iniciação ao xadrez a partir da perspectiva dos elementos básicos

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## ABSTRACT

The research was directed towards the process of chess sports initiation during the period of general basic training, with the objective of characterizing this process from psycho-pedagogical criteria during the teaching-learning of the basic elements of this sport discipline; therefore, its importance lay in the contribution to the special didactics of chess, by giving it a formative, contextualized and logical sequential character in search of the general basic training of schoolchildren from an integral educational approach. In addition, from the theoretical renovation, it is possible to conceive a dialectic and global sport initiation in order to enable the schoolchildren and educator to acquire resources such as knowledge, skills and attitudes.

**Keywords:** Psycho-pedagogical; Sports initiation; Chess; Basic elements; Piece movement.

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## RESUMEN

La investigación se dirigió hacia el proceso de iniciación deportiva del ajedrez durante el período de formación básica general, con el objetivo de caracterizar este proceso a partir de criterios psicopedagógicos durante la enseñanza-aprendizaje de los elementos básicos de esta disciplina deportiva; por tanto, su importancia radicó en la contribución a la didáctica especial del ajedrez, al imprimirle un carácter formativo, contextualizado y lógico secuencial en busca de la formación básica general de escolares desde un enfoque integral educativo. Además, desde la renovación teórica, se pueda concebir una iniciación deportiva de manera dialéctica y global para que capaciten al escolar y educador a adquirir recursos como conocimientos, habilidades y actitudes.

**Palabras clave:** Psicopedagógica; Iniciación deportiva; Ajedrez; Elementos básicos; Movimiento de las piezas.

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## RESUMO

A investigação foi orientada para o processo de iniciação desportiva no xadrez durante o período de treino básico geral, com o objectivo de caracterizar este processo com base em critérios psicopedagógicos durante o ensino-aprendizagem dos elementos básicos desta disciplina desportiva; portanto, a sua importância reside na contribuição para a didática especial do xadrez, dando-lhe um carácter formativo, contextualizado e sequencial lógico em busca da formação básica geral das crianças em idade escolar a partir de uma abordagem educacional integral. Além disso, a partir da renovação teórica, é possível conceber uma iniciação desportiva de forma dialéctica e global a fim de permitir aos alunos e educadores adquirirem recursos tais como conhecimentos, competências e atitudes.

**Palavras-chave:** Psicopedagógico; Iniciação desportiva; Xadrez; Elementos básicos; Movimento das peças.

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## INTRODUCTION

Throughout history, numerous researches have been generated, both international and national, to determine the theoretical-methodological assumptions present in chess didactics. Therefore, the treatises of several authors from different periods are analyzed, quoted by [García Camejo, Tejada and Núñez-Aliaga \(2020\)](#), which use varied structural procedures for the teaching-learning of the basic elements, with a certain degree of spontaneity, when obviating the particularities or psycho-pedagogical characteristics of the personality of the practitioners, which leads them to limitations in the educational aspect.

In this sense, [Blanco \(2004\)](#), citado por [García Camejo, Tejada y Núñez-Aliaga \(2020\)](#), also limits himself to a system of instruction, which surpasses the previous ones by attending to preschoolers and schoolchildren, but in his works he does not maintain a defined structure that offers a sequence of interrelated steps for the direction of cognitive activity of children. [Gutiérrez et al, \(2017\)](#) are limited to a system of activities for the initial teaching of the basic elements, in order to improve the practice of chess in the Educational Unit.

On the other hand, [Fernández-Oliveras, Ortega and Oliveras \(2018\)](#), who made a literature review on chess as a teaching-learning tool and its use in the playful learning of experimental sciences and mathematics, were consulted. As well as, [Wessel and Aciego \(2017\)](#), who make a comparison from Neuropsychology on adolescent chess players.

In the Cuban field, the didactic aspects of training are deepened with [Rivero et al., \(2015\)](#), who implemented the comprehensive program of preparation of the chess player, and [Heredia et al. \(2016\)](#), who perfected it. With this guiding document, the pairs of teaching-learning methods are adapted to chess and a new order of contents is presented. For their part, [Diaz and Bernal \(2016\)](#) base their study towards the elaboration of a chess support manual for the teaching of tactical combinations in talented students of the U11 category. Similarly, Bertot, Dopico, [Sánchez and Rosero \(2016\)](#) and [Tey, Rodríguez and Cordón \(2020\)](#), limit themselves to the study of openings during the training of school chess players. In the case of [Pérez Peña \(2020\)](#), he proposes a pedagogical strategy to initiate 4 and 5 year old children in chess.

However, the absence of treatment alternatives to the didactic process of sports initiation in chess from the contextual point of view is revealed, as well as limitations in the dynamics of the game in terms of significant aspects in the teaching-learning of the basic elements and their procedures, by showing limitations in the psycho-pedagogical action.

That is why, the present article aims to characterize the process of chess sports initiation, based on psycho-pedagogical criteria during the teaching-learning of the basic elements. The type of research carried out was bibliographic, in which scientific documents from recognized research articles, books, doctoral theses and reports from national and international organizations and agencies were analyzed, and the considerations of [García Camejo, Tejada and Núñez-Aliaga \(2020\)](#) were taken into account. The topics covered were the psychopedagogical characteristics of the process of sport initiation in chess and the basic elements.



## DEVELOPMENT

The results obtained through the theoretical systematization of the topics addressed are shown below, based on:

Psychopedagogical characteristics of the process of sport initiation in chess Pedagogy, assuming [Velásquez de Bustamante, de León and Díaz \(2009, p.24\)](#), focuses its attention on the different models and approaches to education, as well as the methods that make possible the formation of people and the construction of learning in the educational and social context. On this basis, the theory and methodology of its direction and organization are elaborated, and contents, methods, procedures and means are perfected.

The sport initiation, as a support of the high performance pyramid, has become a fundamental link for the entry of minors in the practice of chess. This becomes more important nowadays, since it acts as a determining factor in the general basic formation of the future chess players.

Although [Heredia et al. \(2016\)](#) proposes three stages or levels of preparation for chess players: 1. Basic training level, 2. Mastery training level and 3. Level of mastery improvement, the authors of this article prefer to call the first level: Initiation stage, which, as a teaching-learning process of the beginner schoolchild, can be extended from after six years to twelve years of age for both sexes, with the pioneer categories seven-eight, nine-ten and eleven-twelve years. The initiation stage goes through two very important periods in the preparation of the chess player: 1) general basic training and 2) special basic training.

The authors focused their research on the first of these two periods, that of basic general training in chess. This first moment of the initiation stage marks the beginning of the scholar's sports life. It corresponds to the need of teaching-learning contents such as: the values of the game, characteristics of the board, movements (translation and capture) and value of the pieces, check and checkmate, the board game, characteristics and general principles of the phases of the game and strategic ideas and tactical issues.

Therefore, this period highlights the guiding basis in the action of teaching the basic elements during the process of sports initiation in chess, with which learning is made conscious. It includes the actions to be carried out for the development of the skills of planning, controlling, its close link with the execution and the mechanisms of regulatory character where the quality of understanding, execution and the result obtained is analyzed.

During the teaching-learning of the basic elements, it is necessary to know, first of all, the external features of the moves. This knowledge is achieved thanks to the organized demonstration of the board and the pieces being studied, their order, organization and evaluation. The efficacy in these conditions depends on the teacher's ability to highlight the fundamental links of the measures and the effectiveness of the visual perceptions of the schoolchildren.

In addition, the notation of the game, the elements to value a position, the procedures to develop the calculation of variants, the practice of preparation games and tournaments and the elementary notions of the rules are conceived. A central element are the axiological contents, the history of chess, its development in Cuba and in the



locality, the biographical summaries of outstanding players with emphasis on those of the municipality, among others that require this level of preparation.

Children who fall into the seven to eight years old category are called by some school psychologists "minors" or "little ones" and generally begin their school life in the first and second grades, included in the first cycle of primary education of the so-called formal education. The so-called Integral Sports School (Eide in Spanish) and other high performance centers are registered in this system of regulated education. However, the practice of sports in the sports complexes is not part of a regulated education system. Education in the sports area is also intentional, has defined objectives, is institutionalized and is carried out by qualified personnel, but it falls under the concept of non-formal education.

Nevertheless, grassroots sport must be oriented towards the fulfillment of the elementary school's purpose, as defined by **Rico, Santos and Martín-Viaña (2008)**:

(...) to contribute to the integral formation of the schoolchild's personality, encouraging from the early grades the internalization of knowledge and value orientations that are gradually reflected in their feelings, ways of thinking and behavior, in accordance with the system of values and ideals (...) (p.9).

The relationship between the schoolchild's current abilities and his/her potential is important, when assuming the socio-historical-cultural approach. A first level of current performance consists of working and solving tasks or problems without the help of another, called the actual level of development. The level of potential development is the level of competence that the schoolchild can reach when guided and supported by another person. The difference or gap between these two levels of competence is called the "zone of proximal development" (ZDP in Spanish). The idea of a significant adult (or a peer, such as a classmate) mediating between the task and the child is called scaffolding.

Another contribution is the interrelation between the development of language and thought. This area recognizes the interconnection between oral language and mental concepts, stating that thought and word are completely linked and that it is not correct to take them as two isolated elements. In the ZDP, it is necessary to think about the teaching-learning process and to take into account the transition from the signaling to the meaning of the chess contents taught by the teacher. Due to its psychological basis, the interest of this approach is focused on the general basic training of schoolchildren. The relationship that man establishes with the material world has a dialectical character because an object-subject interrelation is established: the unity of theory with practice, a principle assumed in the selected theoretical-methodological framework, applied to psychology in a creative way by the Vygotskian approach.

Knowledge is elaborated at two closely linked levels: the sensory-perceptual level and the rational level, the latter expressed through language; hence the importance of the teaching aids that serve as indispensable elements to make the contents of teaching more objective and thus the performance of developmental learning in future chess players.



The systemic conception of the teaching-learning process in Higher Education is assumed, that the system of skills of a branch of knowledge is established on the basis of levels of systematicity of knowledge, framed in the concept, principles and theories, in which its dialectical character is evidenced. These levels of systematicity are reflected in chess; therefore, teachers should be framed in the teaching of the basic elements for the achievement of a developing learning, which has been addressed by several pedagogues; in this research it is assumed what **Castellanos (2002, quoted by Gamboa, Barrera and Ramos, 2018)** refers:

"It guarantees in the individual the active and creative appropriation of culture, fostering the development of his or her constant self-perfection, autonomy and selfdetermination, in close connection with the necessary processes of socialization, commitment and social responsibility (epigraph. 1.3, paragraph 2).

Therefore, in order to be developing, learning should fulfill the elementary criterion: to promote the basic general formation of the student, which guarantees the unity of the cognitive and the affective-valuative in the development and personal growth of the apprentices. To promote the progressive transition from dependence to independence and self-regulation, as well as the development in the subject of the capacity to know, control and transform his own person and his environment.

To develop the capacity to carry out lifelong learning, based on the mastery of skills and strategies for learning to learn and the need for constant self-education. Therefore, the category Social Situation of Development (SSD) needs to be taken into account, which **Fariñas (2005) quoted by González (2018)**, summarizes:

... at the beginning of each age period a peculiar, unique and unrepeatable relationship, specific to that stage of life, is established between the child and its environment, first and foremost a social one. We call this relationship the social situation of development...this relationship signifies...a new character of the perception of external reality and of the activity in it, a new character of the perception of the child's own internal life and of the internal activation of his psychic life...The social situation of development is the starting point for all the dynamic changes that occur in development during a given period. It determines in a complete and global way those forms and that path through which the child acquires new personality properties (paragraph 15).

**González (2018)** goes on to quote **Fariñas (2005)**, to define: the development consists, then, on the arriving at a new social situation of development, in which the human subsequent self-assurance is generated...The development social situation expresses the dynamic conjunction of interpersonal or external conditions and intrapersonal or internal conditions that produce the development of the person... which is also part of these personal experiences (paragrapf 15).

In this way, the basic elements of chess should be visualized as a tool for the general basic training as a new social situation of development which, at the same time, assumes as a reference the physical-educational integral approach, as proposed by **López Rodríguez (2006)** and, in addition, uses the other teaching disciplines as an instrument for the achievement of knowledge and skills. In other words, to keep in mind the educational component together with the recreational one, without prioritizing high-performance sport, since in the long term it will contribute to it, but without impositions.





On this subject it is important to consider **Grosser (1986)**, quoted by **García Camejo and Garcés Carracedo (2012 paragraph 15)**, in stating that for many years performance sport has penetrated the world of children and young people. In some places, schizophrenic demands are made on younger and younger children to achieve higher and higher results.

Therefore, initiation in sports as a teaching-learning process should be done according to the characteristics of the students and in accordance with the goals to be achieved in each grade. It is important to pay attention to the fundamentals that explain the evolution of the educational process in principle, in the early age from sociological, biological, psychological, pedagogical and gender perspectives because at this stage the general basic formation begins.

From the sociological point of view, chess is recognized as a social phenomenon that manifests itself in multiple ways, which leads to support the relationship between socialization and individualization in the development of personality, by recognizing contextualization as an essential process that energizes this relationship. This constitutes the theoretical and methodological basis to establish a didactic system that contributes to overcome the inadequacies that are manifested in the process of sports initiation.

**Castro's approaches (2008)** quoted by **Torres (2006 pp.340-343)** are related to the above: "What I like about the game [of chess] is that it forces you to think, that is the problem, it is not a matter of winning places, it educates man in the habit of choosing between variants and one of the worst problems that I often see is that people do not have the habit of looking for variants; (...) sometimes we have a lot of knowledge, but we do not have the habit of thinking about solving a problem and chess puts you at every moment before the need to solve the problem (...). Chess is a great instrument to develop the habit of using intelligence".

### **Criteria supporting the teaching-learning of the basic elements of chess**

It is necessary to analyze certain definitions, as in the case of **Álvarez de Zayas (1996)**, who emphasizes that:

"The systematization of the new content, of the new object and, especially, of its invariant, is achieved in the dynamics of the process and is the fundamental result, it is the most valuable learning" (p.112).

**Álvarez de Zayas himself (1995)** defines teaching as: "the activity carried out by the teacher in the teaching-educational process" (p.14). The author assumes the criterion that teaching transits from one level to another and so on, successively, until concluding his instruction by appropriating the fundamentals to develop skills and habits to express his thinking and to study the notions, contents of the basic fundamentals in a logical, sequential and systemic way.

The teaching-learning dynamics of the basic elements is the fundamental link in sports initiation where, through the interaction between the teacher and the students involved in a space of construction of meanings and senses, they develop the chess formative activity and thus its transforming capacity. Therefore, it is assumed that the current dynamics of teaching-learning of the basic elements of chess has an autocratic and fragmented character because it conceives that teachers act as transmitters of a fixed body of content that they send to passive learners, who operate as receivers and where successful teaching implies the efficient transmission of the content that is intended to





be achieved. That is, the content is transferred mechanically by what the teacher does to passive and docile schoolchildren, with limited dialogue between them; what is wanted cannot be confused with total horizontality and nondirectivity.

The specific procedures applied to determine the content nuclei of the basic elements are limited in the approach between what the student knows and what he/she is going to learn, thus restricting the general basic training. The theoretical and conceptual foundations of the teaching-learning of chess and the regularities lead the authors to characterize the methodological treatment given in the main research experiences related to the basic elements.

The term basic elements is used to identify the contents of the first units of the teaching programs. Thus, the basic elements of chess are assumed to be the system of knowledge, skills and primary or essential values that form the basis for the learner to be able to understand and practice this game-sport efficacy and efficiently.

Thus, fragmentation is evident in the teaching of the basic elements that leads to gaps in learning; for example, in the subject of the movements of the pieces, the authors do not agree on how to proceed. Some authors suggest the following order: rook, bishop, queen, king, knight and pawn. Others also start with the rook, but leave the pawn next to last and the knight last.

Two other examples to analyze, the first one on the logic that starts with rook, followed by bishop, knight, king, queen and leaves the pawn last. In the second, it starts with the queen, followed by the king, rook, bishop, pawn and leaves the knight last.

Likewise, it is striking that some propose to start with the pawn, followed by queen, rook, bishop, knight and lastly teach the king. Or, after starting with the pawn, they continue with the king, rook, queen, bishop and knight.

On the other hand, there is the proposal of the International Chess Federation (**Fide in Spanish**) (2018) in *Laws of Chess*, which states to start with bishop, rook, queen, knight, pawn and leave the king last. However, in On Line courses you can see a similar proposal: bishop, rook, queen, but changes to continue with king, knight and pawn.

One of the classics of chess, the former World Champion Garri Kasparov, stands out in a controversial way, because he suggests to proceed first with the pieces before the board and proposes an even more controversial logic in the teaching of the translation and capture moves of the pieces: rook, bishop, queen, knight, pawn and leaves the king last. This dynamic is also suggested in on-line courses, as well as with different procedures: rook, bishop, queen, king, knight and pawn. In the same way, proposals are observed with the following order: pawn, knight, bishop, rook, queen and king. It was also analyzed a proposal to start with king, queen, rook, knight, but leaving the bishop as penultimate and ending with the pawn. From these works, the social value of chess as a multidisciplinary activity is assumed.

On the other hand, **García Camejo, G., Tejeda, M. and Núñez-Aliaga (2019)**, on the teaching order of the pieces, propose a logical sequential procedure, based on the hierarchy of the pieces and issue the criterion:

...in the teaching-learning process of Chess, the Knight should not be considered as the most complex piece. Besides, they consider that when presenting this piece to younger students, it should be presented as a Knight, being more



attractive for the children and even more so if it is related to stories and legends of chivalry. Another important element that the teacher should observe in favor of the learning of his students is that during the development of the games for the young apprentices it is not pleasant to be captured by the knights, they prefer them in relation to the bishops in the change of pieces, despite the fact that the latter are generally considered to be somewhat superior (p.4).

In addition, [García Camejo, G., Tejada, M. and Núñez-Aliaga \(2019\)](#), refer to several works and add:

"... that, in the process of sport initiation, several authors consider the Knight as the most complex piece in Chess due to its singular jump; thus leading them to leave this figure last in the logic of teaching the movements of translation and capture of the pieces." (p.4).

Likewise, the criticism they make of the way of teaching the movement of the Knight as an "L" is taken on board and they state:

It seems that these authors directed the teaching to population groups with higher ages, since they did not take into account the characteristics of the age and the grade in which the student is. In this way, the teacher can deform the learning of the letter "L", since the younger schoolchild can take as a reference the teaching of the movement of this piece, when the ideal would be to contribute to formal education with the teaching of the alphabet, writing and reading ([García Camejo, G., Tejada, M. & Núñez-Aliaga, 2019, p.5](#)).

Referring to Cuban authors, it is worth mentioning the work done by the group of professors of the Instituto Superior Latinoamericano de Ajedrez (Isla), who have proposed at different times: 1) king, rook, bishop, queen, knight and pawn; 2) king, rook, bishop, queen, followed by the pawn and leaving the knight last.

[Rivero et al., \(2015\)](#) in the first comprehensive program for the preparation of the chess athlete suggest: king, queen, rook, bishop, pawn and also leave the knight last. This program divides the teaching of the movements of the pieces, the first four are placed in class three and the last two in class six, with two intermediate classes on the subject of checkmate. This program, like the previous versions, has limitations in the hierarchy of the teaching order of the other basic elements.

These structural procedures of the content are developed in the Integral program of preparation of the athlete in chess by [Heredia et al., \(2016\)](#), which divides the theoretical contents by thematic points into: basic rudiments, chess history, rules, openings, middlegame and endgame. The program, as a guiding document in force for the different institutions, assumes the procedure: king, rook, bishop, queen, continues with the pawn and leaves the knight last, and establishes the basic rudiments by points.

Point one. The board and its characteristics; the movement [translation], capture and characteristics of the pieces include the value and potentialities.

Point two. Initial placement of the pieces, the check and ways to evade it and checkmate as the end of the game. He leaves for this point the rule that two kings can never be close to each other, which should be dealt with in the first point. In point three, he deals with the capture, the pass and castling, elements that belong to piece movements. In this point, the stalemate is also dealt with, followed by the stalemate, since the first one



is part of the last one. Likewise, the elements of the combination are dealt with in a hurried manner due to their complexity.

In point four, it treats in advance the annotation of the game with the unnecessary proposal of the descriptive system plus the algebraic one in that order, although it clarifies to give preference to the last one. In addition, it addresses the complex symbology of comments used by the chess informer. For schoolchildren, it is more important to learn to play and then to annotate according to what has been assimilated in the school curriculum.

In point five, he deals with simple or elementary mates, which can be dealt with in point four. The logic he proposes is: king and queen against king; king and rook against king, when it should be taught first to the one who leaves third: the mate of king and two rooks against king, because it is simpler. Followed by four. The mate of king and two bishops against king; but he does not give treatment at this point to the basic mate of king, bishop and knight against king, which he deals with later in the tactical themes of checkmate combinations with knight and bishop. In point six, he proceeds with the phases of the game and their characteristics and the relationship between strategy and tactics.

In addressing the contents of the elementary principles of the opening, it begins with the double king pawn opening in the following order: first, the Italian opening; second, the Spanish opening; third, the Scotch opening; however, the latter is simpler than the first two. To continue with the treatment, to the king's gambit and center opening, structured from logic and the elementary principle from simple to complex, however, *Heredia et al., (2016)* in the integral program, take a basis of high competence by expressing in the methodological orientations:

"(...) the themes of openings can be adjusted in terms of their order, as they can be adapted to the formation of a possible repertoire according to the criteria of the students and trainers (...)" (p.25).

In general, when reviewing the different versions of the Integral Program for the preparation of the athlete in chess, the *Fide Chess Laws* and other texts on the subject, there are insufficient methodological guidelines to explain the reason for the structural procedure they provide. *Only Blanco (2004b quoted by García Camejo, Tejeda, Núñez-Aliaga, 2020)*, without clarity, refers: "following the same order in which we describe the board, that is, starting with pieces that move through columns, rows and diagonals, respectively" (p.162).

In chess classes, the demonstration of exercises for younger schoolchildren should have a simple content, be understandable; in them, the necessary parts and elements should be clearly separated.

## CONCLUSIONS

The psycho-pedagogical characterization allows understanding and, at the same time, perfecting the process of sports initiation in chess from the perspective of the basic elements, since they act as facilitators when appreciating each movement from the beginning to the end, including its moment of valuation, analysis of the board and each particularity of the pieces involved. The process of sports initiation in chess demands



from the psychological preparation a relationship in its cognitive and volitional aspects, which influences the teaching-learning of the basic elements.

## REFERENCES

- Álvarez de Zayas, C. M. (1995). Epistemología. DFP-MES.
- Álvarez de Zayas, C. M. (1996). Hacia una escuela de excelencia. Academia. [https://books.google.com.cu/books/about/Hacia\\_una\\_escuela\\_de\\_excelencia.html?id=DGDnPgAACAAJ&redir\\_esc=y](https://books.google.com.cu/books/about/Hacia_una_escuela_de_excelencia.html?id=DGDnPgAACAAJ&redir_esc=y)
- Bertot, L., Dopico, H., Sánchez, B. y Rosero, M. (2016). Ejercicios para mejorar la apertura en ajedrecistas de la categoría 9-10 años. Lecturas Educación Física y Deportes Revista Digital efdeportes. Buenos Aires, Año 21 (223). <http://www.efdeportes.com/efd223/ejercicios-para-mejorar-la-apertura-en-ajedrecistas.htm>
- Díaz, J. L., y Bernal, F. (2016). Aproximaciones a una manual de apoyo de ajedrez para la enseñanza de las combinaciones tácticas en los alumnos talentos de la categoría sub 11 años, que entrenan en el proyecto "El patio de los milagros" de municipio Pinar del Río, Cuba. Revista Observatorio del Deporte, Vol. 2 (2) abril-junio, Universidad de los Lagos, Campus Santiago, pp.132-137. <https://bkp.revistaobservatoriodeldeporte.cl/gallery/6%20oficial%20articulo%20vol%202%20num%202%202016%20rev%20odep.pdf>
- Federación Internacional de Ajedrez. (2018). Leyes del Ajedrez FIDE 2018. Leyes-2018-bilingües español- inglés.pdf. <https://feda.org/sports/leyes-del-ajedrez-fide-2018.html>
- Fernández-Oliveras, A., Ortega, J. y Oliveras, Ma. L. (2018). El ajedrez en la enseñanza-aprendizaje de áreas científico-matemáticas, una revisión bibliográfica en el contexto español. ANALES. 1 (376). <https://revistadigital.uce.edu.ec/index.php/anales/article/view/1763>
- Gamboa, Y., Barrera, D. y Ramos, I. (2018). Sistema de actividades para contribuir al aprendizaje desarrollador de la Estadística Inferencial, en el contenido Prueba de Hipótesis. Revista Atlante: Cuadernos de Educación y Desarrollo. <https://www.eumed.net/rev/atlante/2018/12/aprendizaje-desarrollador.html>
- García Camejo, G. G., Tejeda, M. y Núñez-Aliaga, F. (2020). ¡El salto del Caballo! Aproximación a la Didáctica del Ajedrez. Revista Científica de Ajedrez "Capablanca". 1 (1), enero-julio. <http://capablanca.cug.co.cu/index.php/Ajedrez/article/view/3>
- González, W. (2018). Aproximación al aprendizaje desarrollador en la Educación Superior. Educação, 43, (1), pp. 11-26. Universidade Federal de Santa Maria. <https://www.redalyc.org/journal/1171/117157483003/html/>



- Gutiérrez Cruz, M., Bernardita Menéndez, D., Guillén Pereira, L., Angulo Porozo, C. H., Arias Cevallos, K. P., & Guallasamin Díaz, F. (2017). Sistema de actividades pedagógicas para la enseñanza inicial de los elementos básicos del ajedrez. EFDeportes.com. Revista Digital, 22(229). <https://www.efdeportes.com/efd229/sistema-de-actividades-pedagogicas-para-ajedrez.htm>
- Heredia, D. et al (2016). Programa Integral de Preparación del Deportista de Ajedrez. La Habana: Dirección de Alto Rendimiento. INDER.
- Pérez Peña, L. D. (2020). Iniciación del ajedrez en la infancia preescolar: un experimento pedagógico. Transformación, trf vol.16 (1). Camagüey, enero-abril. [http://scielo.sld.cu/scielo.php?script=sci\\_arttext&pid=S2077-29552020000100090](http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2077-29552020000100090)
- Rico Montero, P., Santos Palma, E. M., Martín-Viaña Cuervo, V., García Ojeda, M., & Castillo Suárez, S. (2008). El modelo de escuela primaria cubana: Una propuesta desarrolladora de educación, enseñanza y aprendizaje. Pueblo y Educación. [https://www.mined.gob.cu/wp-content/uploads/2019/03/modelo\\_primaria.pdf+&cd=1&hl=es-419&ct=clnk&gl=cu](https://www.mined.gob.cu/wp-content/uploads/2019/03/modelo_primaria.pdf+&cd=1&hl=es-419&ct=clnk&gl=cu)
- Rivero, C. et al., (2015). Programa Integral de Preparación del Deportista de Ajedrez. La Habana: Dirección de Alto Rendimiento. INDER.
- Tey, T. M., Rodríguez, Z. y Cordón, R. (2020). Acciones metodológicas para la formación de habilidades en la enseñanza de las aperturas. Revista Olimpia Vol. 17. <https://revistas.udg.co.cu/index.php/olimpia/article/view/2062/3891>
- Torres de Diego, M. J. (2006). Fidel y el deporte. Selección de pensamientos 1959-2006. Deportes. <https://isbn.cloud/9789597133896/fidel-y-el-deporte-seleccion-de-pensamientos-1959-2006/>
- Velázquez de Bustamante, M., de León, A., Díaz, D. (2009). Pedagogía y Formación Docente. Vol. 1 (2da ed.). Coordinación Educativa y Cultural Centroamericana, CECC/SICA. [https://ceccsica.info/sites/default/files/content/Volumen\\_01\\_0.pdf&ved=2ahUKEwjvsOsc\\_n0AhUZQzABHQJVC14QFnoECAMQAQ&usg=AOvVaW3](https://ceccsica.info/sites/default/files/content/Volumen_01_0.pdf&ved=2ahUKEwjvsOsc_n0AhUZQzABHQJVC14QFnoECAMQAQ&usg=AOvVaW3)
- Wessel, T. C. y Aciego, R. (Julio de 2017). Neuropsychological impact of chess on executive functions and attention of adolescents: A quasi-experimental pilot study. ResearchGate. Universidad de La Laguna. [https://www.researchgate.net/publication/318130702\\_Neuropsychological\\_impact\\_of\\_chess\\_on\\_executive\\_functions\\_and\\_attention\\_of\\_adolescents\\_A\\_quasi-experimental\\_pilot\\_study](https://www.researchgate.net/publication/318130702_Neuropsychological_impact_of_chess_on_executive_functions_and_attention_of_adolescents_A_quasi-experimental_pilot_study)



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**Conflict of interests:**

Los autores declaran no tener conflictos de intereses.

**Authors' contribution:**

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



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