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System of indicators to control and evaluate technical-tactical elements in child karate practitioners

[Sistema de indicadores para controlar y evaluar elementos técnico-tácticos a karatecas infantiles]

[Sistema de indicadores para controlar e avaliar elementos técnico-táticos em crianças praticantes de caratê]

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ABSTRACT

Introduction: The control and evaluation of competitive karate activity should be carried out in training and competitions, taking into account the arsenal of technical-tactical elements in the offensive, defensive and mixed.

Objective: to design a system of indicators for the control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity.

Methodology: The research adopts a dialectical materialist approach with a non-experimental, longitudinal panel study design. Methods used at the theoretical level included analytical-synthetic, inductive-deductive, modeling, and a structural-functional systemic approach. Empirical methods included document analysis, structured surveys, interviews, indirect observation, methodological triangulation, expert opinion, user opinion, and statistical-mathematical analysis.

Results: The analysis derived from the application of the methods confirms that there is limited guidance for coaches regarding the control and evaluation of technical-tactical elements in competitive activity, and that there is an absence of a system of indicators grounded in scientific theory. The information provided by experts and the results obtained through the statistical processing of the Cross-Impact-Multiplication Matrix allowed for the identification of three dimensions (offensive, defensive, and mixed) and 44 indicators. Furthermore, a system of indicators, measurement criteria, and an evaluation scale are provided, which culminates in the development of an observational instrument.

Conclusions: The results obtained from the assessment and application of the system of indicators found within the observational instrument, for the control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity, allowed us to demonstrate that it meets the essential scientific-technical requirements to efficiently conduct the process. Its relevance is corroborated based on the evaluation of its usefulness and its social quality. The potential to offer coaches new guidance on the control and evaluation of technical-tactical elements from competitive activity is recognized.

Keywords: control and evaluation, technical-tactical elements, competitive activity, indicator system.

RESUMEN

Introducción: el control y la evaluación desde la actividad competitiva de los karatecas se debe realizar en los entrenamientos y en las competencias, de modo que se tenga en cuenta el arsenal de los elementos técnico-tácticos a la ofensiva, defensiva y mixto.

Objetivo: diseñar un sistema de indicadores para el control y la evaluación de los elementos técnico-tácticos a karatecas (11-12 años) desde la actividad competitiva.

Metodología: la investigación asume un enfoque dialéctico materialista con un tipo de estudio no experimental, longitudinal de panel. Se utilizaron métodos del nivel teórico: analítico-sintético, inductivo-deductivo, modelación y enfoque sistémico estructural-funcional; del nivel empírico: análisis de documentos, encuesta estructurada, entrevista, observación indirecta, triangulación metodológica, criterio de expertos, criterio de usuario y el estadístico-matemático.

Resultados: con el análisis emanado de la aplicación de los métodos se corrobora que son limitadas las orientaciones a los entrenadores acerca del control y la evaluación de los elementos técnico-tácticos desde la actividad competitiva y la ausencia de un sistema de indicadores fundamentado desde la teoría científica. La información ofrecida por los expertos y los resultados obtenidos mediante el procesamiento estadístico de la Matriz de Impactos Cruzados-Multiplicación permitieron determinar tres dimensiones (ofensiva, defensiva y mixta) y 44 indicadores; además, se aporta un sistema de indicadores, criterios de medidas y una escala evaluativa que se materializa la elaboración de un instrumento observacional.

Conclusiones: los resultados obtenidos de la valoración y aplicación del sistema de indicadores que se encuentra dentro del instrumento observacional, para el control y la evaluación de los elementos técnico-tácticos a karatecas (11-12 años) desde la actividad competitiva, permitieron demostrar que reúne los requisitos científico-técnicos imprescindibles para conducir de manera eficiente el proceso, se corrobora su pertinencia a partir de la evaluación de su utilidad y su calidad social, se reconoce las potencialidades para ofrecer a los entrenadores nuevas orientaciones acerca del control y la evaluación de los elementos técnico-tácticos desde la actividad competitiva.

Palabras clave: control y evaluación, elementos técnico-tácticos, actividad competitiva, sistema de indicadores.

RESUMO

Introdução: O monitoramento e a avaliação da atividade competitiva de atletas de karatê devem ser realizados durante os treinos e competições, levando em consideração toda a gama de elementos técnico-táticos ofensivos, defensivos e mistos.

Objetivo: Desenvolver um sistema de indicadores para monitorar e avaliar os elementos técnico-táticos de atletas de karatê (11-12 anos) durante a atividade competitiva.

Metodologia: Esta pesquisa adota uma abordagem materialista dialética com um delineamento de estudo longitudinal não experimental. Os métodos utilizados incluíram os seguintes níveis teóricos: analítico-sintético, indutivo-dedutivo, modelagem e uma abordagem sistêmica estrutural-funcional; e os seguintes níveis empíricos: análise documental, questionário estruturado, entrevistas, observação indireta, triangulação metodológica, opinião de especialistas, opinião de usuários e métodos estatístico-matemáticos.

Resultados: A análise derivada da aplicação dos métodos confirma que há pouca orientação para treinadores em relação ao controle e à avaliação de elementos técnico-táticos na atividade competitiva e a ausência de um sistema de indicadores fundamentado em teoria científica. As informações fornecidas por especialistas e os resultados obtidos por meio do processamento estatístico da Matriz de Multiplicação de Impacto Cruzado permitiram a identificação de três dimensões (ofensiva, defensiva e mista) e 44 indicadores. Além disso, foi fornecido um sistema de indicadores, critérios de mensuração e uma escala de avaliação, culminando no desenvolvimento de um instrumento de observação.

Conclusões: Os resultados obtidos com a avaliação e aplicação do sistema de indicadores no instrumento de observação, para o controle e avaliação dos elementos técnico-táticos de praticantes de karatê (11-12 anos) em atividades competitivas, demonstraram que ele atende aos requisitos científicos e técnicos essenciais para orientar o processo de forma eficiente. Sua relevância é corroborada pela avaliação de sua

utilidade e impacto social, e reconhece-se seu potencial para oferecer aos treinadores novas orientações sobre o controle e a avaliação de elementos técnico-táticos em atividades competitivas.

Palavras-chave: controle e avaliação, elementos técnico-táticos, atividade competitiva, sistema de indicadores.

INTRODUCTION

The control and evaluation of technical-tactical elements are fundamental to assessing the performance of karate practitioners in competitive activity. In modern sports, these aspects are controlled through statistics, observations, and tests, as they generally facilitate obtaining information about the behavior of karate practitioners (Suárez *et al.*, 2023).

In this sense, several researchers; Sastre *et al.* (2021); Sastre *et al.* (2022); Sastre (2023), from different theoretical positions, give importance to control and evaluation (to karate practitioners of sports initiation and of higher categories), agree that it is necessary to establish a systemic organization of indicators for the control and evaluation of the technical-tactical elements from the competitive activity.

In this regard, Suárez *et al.* (2023) state that karate coaches have frequently encountered difficulties in monitoring and evaluating technical-tactical preparation. This is due, among other reasons, to the lack of indicators and observational tools that would allow them to monitor and evaluate technical-tactical elements in karate. It is considered necessary to establish a system of indicators to guide coaches on how to monitor and evaluate the technical-tactical elements of 11-12 year old karate practitioners in competitive activity.

The Comprehensive Athlete Preparation Program (PIPD) for karate-do (2021-2024) is analyzed, coinciding with Lamas (2020), Acosta (2021), Villavicencio (2021), Castillo (2022), Chang (2022), Morales (2022), Suárez *et al.* (2022), García (2023), Pombrol (2023),

Suárez *et al.* (2023) when they state that the control and evaluation of technical-tactical elements from competitive activity from early ages is not conceived and there is a lack of indicators with a systemic approach that facilitates the control and evaluation process.

For this reason, García (2023), Pombrol (2023) and Suárez *et al.* (2023) argue that grassroots karate teachers lack the theoretical and methodological tools and procedures to control and evaluate the technical and tactical elements of 11-12 year old karate practitioners in competitive activity; in addition, they refer to the lack of a system of indicators that facilitates the process of control and evaluation of the technical and tactical elements of 11-12 year old karate practitioners in competitive activity, with a systemic approach.

Considering the elements presented, a lack of indicators for monitoring and evaluating the technical and tactical skills of karate practitioners (ages 11-12) in competitive activity, using a systemic approach, can be identified. The objective is to design a system of indicators for monitoring and evaluating these technical and tactical skills within the context of competitive activity.

MATERIALS AND METHODS

The dialectical materialist conception arises from the unity of the quantitative and the qualitative. This integration is called a mixed-methods approach; typically, one or more instruments containing both quantitative and qualitative elements are applied. A non-experimental, longitudinal panel study was used; that is, predictions were made about certain characteristics of the object of study. 139 karate practitioners (11-12 years old) were observed with the purpose of selecting the technical-tactical elements most frequently used in competitive activity.

An informal consultation was carried out with experts to compile the initial set of possible indicators for the control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity; a population was

selected consisting of 29 experts (national referees), who participated in the National Rules and Refereeing Course, held in Artemisa in 2022. This population was characterized by having experience, prestige, interest and time to participate in the research.

To reduce the list of indicators for the control and evaluation of technical-tactical elements in karate practitioners (11-12 years old) from competitive activity, 30 of the 45 possible experts were selected, who presented the highest coefficients, with parameters between 0.9 and 0.95, in order to achieve greater scientific rigor.

In evaluating the system of indicators for monitoring and assessing the technical and tactical skills of karate students (ages 11-12) in competitive activities, a group of participants was selected from the provinces of Cienfuegos and Villa Clara. These participants were responsible for implementing the system of indicators using an observational instrument to obtain results in the immediate or medium term. They were selected based on the following criteria: years of experience as karate coaches, educational level, academic and scientific qualifications, employment at a sports complex, and willingness to complete the provided instrument.

The population consisted of 29 users: 21 with bachelor's degrees (72.4%) and 8 with master's degrees (27.6%). The average years of experience was 15. All selected users worked in sports complexes and expressed their willingness to complete the survey.

In the investigation, several methods were used, such as the historical-logical, the analytical-synthetic, the inductive-deductive, indirect observation, modeling, the structural-functional systemic approach, and observation. Expert judgment was also used. Another method employed was mathematical statistics, which allowed for the processing of quantitative data. Frequency tables were used by category to observe the percentage distribution of results, descriptive measures were used to examine the characteristics of the collected data, and measures of association were used to assess the relationships between the data.

RESULTS AND DISCUSSION

The selection of the content that comprises the system of indicators took into account their definition, which influences competitive activity as elements for monitoring and evaluating the technical and tactical skills of karate practitioners (11-12 years old) within the context of competitive activity. Therefore, the research process establishes the question: what to monitor and evaluate in the observational instrument? In this case, it is the system of indicators that guarantees better monitoring and evaluation within the competitive activity.

To define the behavior of competitive activity of 11-12 year old karate practitioners, seven steps were followed:

1. Analysis of the technical-tactical model of karate practitioners (11-12 years old) and the characteristics of competitive karate-do activity.
2. The object of observation was determined during the competitive karate-do activity.
3. Selection of the necessary means for observation
4. Training observers and checking instruments.
5. Execution of observations, review and analysis of published literature and related research.
6. Information gathering.
7. Definition of technical-tactical elements that influence karate practitioners (11-12 years old) from competitive activity.

In the development of the system of indicators and measurement criteria to control and evaluate karate practitioners (11-12 years old) from competitive activity, the procedure provided by Campistrous and Rizo (1998) was used. The authors point out that in the delimitation of the dimensions, indicators and measurement criteria, as in any scientific activity, the first reference is the study and analysis, based on the theoretical knowledge of the object or phenomenon that is required to be controlled and evaluated, of what characteristics can provide information about its state.

There are no established general laws that allow the use of dimensions, indicators, and measurement criteria based solely on theory; however, it is necessary to consider theory and understand the relationships that may exist between the phenomenon to be measured and its characteristics, the foundations that guide the determination of the dimensions, the systems of indicators, and measurement criteria in this research.

- A theoretical review of aspects related to the variable or variables under study is conducted to establish criteria for determining which dimensions, indicators, and measurement criteria could be used. This review includes a comprehensive search of published literature and related research to which the researcher has access.
- Informal consultations with experts to compile an initial list of possible dimensions, indicators, and measurement criteria as a conclusion to the previous step.
- Selection of experts. These must be “contextualized”, that is, they must not only have mastery of the problem under study; they must also be immersed in the context in which the study is carried out.
- Conducting expert consultation to reduce the list of indicators, giving them weight, facilitates the development of a scale to evaluate the state of control and the evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity; it may be easier to reduce it to an ordinal scale.
- The application of statistical techniques means, in particular, using methods to reduce the number of indicators in the initial set without losing substantial information. For its development, the Cross-Impact Matrix – Multiplication Applied to a Classification (MICMAC) tool was applied. This tool allows, from a list of indicators, the establishment of the degree of direct influence between factors, the extraction and identification of the key and determining indicators of the problem under study, with the help of tables and graphs that allow for the modeling of the problem to be addressed.

- Construction of the scale to be used to evaluate the indicators that influence the competitive activity of karate practitioners (11-12 years old).
- Design of instruments that allow us to specify how to control and evaluate the behavior of the essential indicators that influence the competitive activity of karate practitioners (11-12 years old).

System of indicators for the control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity

The dynamics of the indicator system show the interrelation between its elements, since the coach interacts in the process of control and evaluation of the technical-tactical elements of karatekas (11-12 years old) from the competitive activity; he plans, organizes, executes and controls the whole process, in which the karateka is conceived as an active entity.

Each of the elements that make up the system is described below, starting from its input, process and output in the graphical representation (Figure 1).

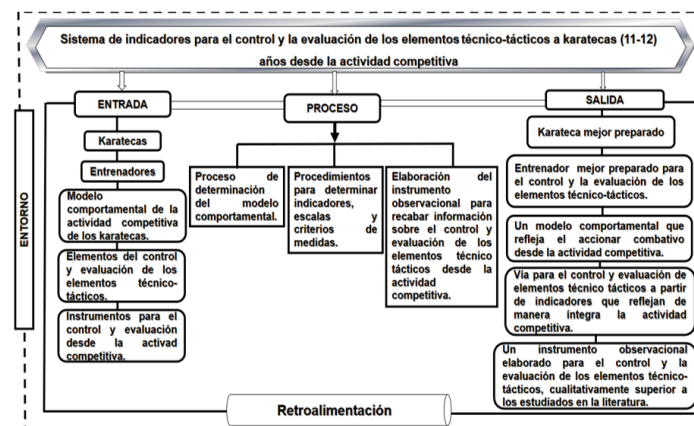


Fig. 1. - Graphic representation of the system of indicators for the control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity

Input elements

- Karate practitioners: show a low level in the execution of technical-tactical elements from competitive activity.
- Coaches: lack preparation and an observational instrument that includes measurement criteria, an evaluation scale and indicators that facilitate the process of control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity with a systemic approach.
- Behavioral model of competitive activity in karate practitioners:

The behavioral model used corresponds to the model proposed and implemented by González (2016), which is based on the contributions of current pedagogical literature: educational, pedagogical and didactic model.

Elements of the process

The process within the proposed indicator system comprises a set of elements that interact simultaneously under certain conditions, with the aim of improving the control and evaluation of the technical and tactical skills of karate practitioners (ages 11-12) in competitive activities. In this process, the elements entering the system are transformed to ensure the desired output. Among the process elements are those that will transform all the input elements. These are listed below:

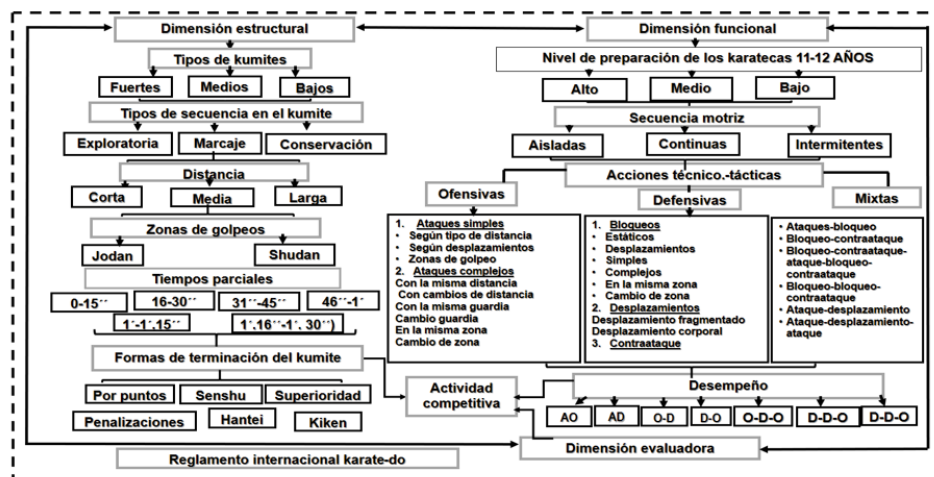


Fig. 2. - Graphic representation of the behavioral model of competitive activity of the karateka in the 11-12 year old category

Process of determining the behavioral model

After studying the competitive activity of 11-12 year old karate practitioners, their behavior in competitions is defined and summarized in Figure 2, in which the structural and functional aspects converge; these determine the degree of influence that the state of these dimensions exerts on the orientation of the fighting style of the 11-12 year old karate practitioner from the competitive activity.

Procedures for determining indicators, scales, and measurement criteria

In reducing the indicators for monitoring and evaluating competitive activity, as proposed in the initial set, the use of experts was taken into account, following the methodological steps outlined by Campistrout and Rizo (1998). The information they provide could be used as a guide for individualizing sports training planning.

In the system of indicators for the control and evaluation of competitive activity, values between 7 and 10 points were reached, according to the weighting criteria given by Lanuez. *et al.* (2008)

Development of the observational instrument to obtain information about the control and evaluation of technical and tactical elements from competitive activity

To address and codify the indicators, a comprehensive web-based management system was developed, allowing users to register intuitively and securely. The system guarantees that all entered data is permanently stored on the platform. A microservices-oriented *backend architecture was used*, enabling easy and scalable integration of new sports and their respective sub-modules.

This sub-module offers a user-friendly interface that allows users to add and manage their karate practitioners, facilitating detailed tracking of their athletic performance and development. The comprehensive web-based management system allows for complete customization of the monitored and evaluated fields, enabling users to adapt the evaluation criteria to the specific needs of the practitioners at each stage of assessment. This is achieved by selecting indicators that align with the specific needs of 11-12 year old karate practitioners, from competitive activity onward, who will receive an evaluation of excellent, very good, good, fair, or poor.

Additionally, the ability to export data to .xls format and upload competition videos directly to the platform is integrated, facilitating the storage, review and evaluation of technical-tactical elements for karate practitioners (11-12 years old) from competitive activity.

Once all the indicators from the competitive activity were recorded, they were assessed to provide an evaluative criterion for each karateka under study.

Output elements

The output elements are the result of the transformation suffered by the input elements in the process; these are many more than those declared in the graph, since it is considered that the coach and the karateka are those who have the highest hierarchy in the system of indicators; however, it is recognized that the control and evaluation of the technical-tactical elements from the competitive activity, also undergo a transformation

in the process, since they suffer adjustments based on the objectives proposed for the 11-12 year old karatekas.

Among the changes and adjustments, the following stand out: the brochure prepared for coaches, which outlines the steps to follow when working with the observational tool (web-based management system). The following are defined as output elements:

- Karate practitioners with skills in the execution of technical-tactical elements from competitive activity.
- Coaches better prepared to control and evaluate the technical-tactical elements from competitive activity.
- Existence of a behavioral model that reflects the combative actions of karate practitioners from competitive activity.
- The way to control and evaluate technical and tactical elements based on a system of indicators that fully reflect competitive activity.
- An observational instrument developed for the control and evaluation of technical-tactical elements, qualitatively superior to those studied in the literature.

Feedback

The feedback of the system is ensured through the transformations that are seen in the regulations, in the standards of behavior of karate practitioners in competitive activity, in the quality criteria of the data obtained about the technical-tactical elements and in the categories of karate-do coaches to fulfill the function of control and evaluation.

To determine the system of indicators, the analytical-synthetic method is used. A review of the system of indicators and measurement criteria to be used is carried out based on the defined dimensions, so that the system of indicators that is analyzed corresponds to the guidelines that appear in the PIPD, since the current ones are designed in a general way, they are adjusted to the training of karate practitioners 11-12 years old and they are not directed in particular to the conditions of the field of action of this research.

Since the dimensions, system of indicators and measurement criteria to control and evaluate 11-12 year old karate practitioners from competitive activity are not established, their determination begins from the review of the specialized literature in the sport of karate-do, especially with the authors Sánchez (2018), Sánchez and García (2019) however, the dimensions, system of indicators and measurement criteria that are proposed do not contextualize it in the competitive activity and are directed to school, youth and elite karate practitioners, who are in high performance.

Studies on the initiation of karate-do sports were consulted: Lamas, (2020), Acosta (2021), Rodríguez (2021), Villavicencio (2021), Castillo (2022), Chang (2022), Morales (2022), Suárez (2022), Suárez (2023) but the dimensions and system of indicators proposed do not respond to the competitive activity of 11-12 year old karatekas; it is not established what measurement criteria should be taken into account for the control and evaluation of the technical-tactical elements.

The studies on proposed tools by Sastre et al. (2021), Sastre et al. (2022), and Sastre 2023 were taken into account for the review. As in previous studies, it is not established what measurement criteria should be considered for the control and evaluation of the technical-tactical elements from competitive activity to the karate practitioners under study.

However, the authors consulted previously were taken as a starting point; this allowed the researchers, using the inductive-deductive method, to establish generalizations, going from the general to the particular and vice versa, for the elaboration of the initial set of possible dimensions and indicators to control and evaluate the technical-tactical elements of karate practitioners (11-12 years old) from competitive activity.

CONCLUSIONS

The results obtained indicate that the system of indicators, the measurement criteria for establishing the evaluative scale and the observational instrument developed allow the control and evaluation of the technical-tactical elements of karate practitioners (11-12 years old) from the competitive activity and facilitate the training of intelligent, analytical, independent, creative karate practitioners with a high technical-tactical level, so that they can correctly decide what action to take in the different situations of opposition work in the competitive activity.

Furthermore, it fosters a closer relationship between coaches and the karate students they are studying, revealing their strengths and weaknesses and facilitating the work of addressing individual differences. Therefore, it improves the monitoring and evaluation of technical and tactical elements in karate students (11-12 years old) within the context of competitive activity.

BIBLIOGRAPHIC REFERENCES

- Acosta Alonso, Y. (2021). *Elementos técnico-tácticos del tsuki waza de las karatecas en la actividad competitiva* [Tesis de diploma, Universidad de Cienfuegos]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Castillo García, M. (2022). *Estado del control y la evaluación de los elementos técnico-tácticos del geri waza de las karatecas 11-12 años en el municipio de Cienfuegos* [Tesis de diploma, Universidad de Cienfuegos "Carlos Rafael Rodríguez"]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Chang Senra, J. (2022). *Estado del control y evaluación de los elementos técnico-tácticos del geri waza de los karatecas 11-12 años en Aguada de Pasajeros* [Tesis de diploma, CUM Aguada, Universidad de Cienfuegos "Carlos Rafael Rodríguez"]. <http://biblioteca.ucf.edu.cu/biblioteca/>

- García Espinosa, D. D. (2023). *Instrumento observacional para el control y la evaluación de los elementos técnico-tácticos de los karatecas 11-12 años* [Tesis de diploma, Universidad de Cienfuegos “Carlos Rafael Rodríguez”]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Lamas Seife, L. A. (2020). *Comportamiento de la evaluación y control de los elementos técnico-tácticos en la actividad competitiva a los karatecas de la categoría 11-12 años en Cienfuegos* [Tesis de diploma, Universidad de Cienfuegos]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Morales González, A. (2022). *Estado del control y evaluación de los elementos técnico-tácticos del tsuki waza de los karatecas 11-12 años* [Tesis de diploma, Universidad de Cienfuegos “Carlos Rafael Rodríguez”]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Pombrol Jiménez, E. (2023). *Indicadores para el control y evaluación de los elementos técnico-tácticos de los karatecas 11-12 años en la actividad competitiva* [Tesis de diploma, Universidad de Cienfuegos “Carlos Rafael Rodríguez”]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Rodríguez Alfonso, L. (2021). *Evaluación y control de los elementos técnico-tácticos de los entrenadores de karate-do desde la actividad competitiva* [Tesis de diploma, Universidad de Cienfuegos]. <http://biblioteca.ucf.edu.cu/biblioteca/>
- Sánchez Campo, S., & García Larios, V. V. (2019). *Análisis de la preparación física y táctica en la práctica de karate-do*. Publicaciones CPLED.
- Sánchez Nodarse, I. (2018). *Modelo teórico metodológico de preparación táctica para el desempeño táctico del karateca de la selección nacional en la actividad de competición* [Tesis doctoral, Universidad de Ciencias de la Cultura Física y el Deporte “Manuel Fajardo”].

Sánchez Nodarse, I. (2021). *Programa integral de preparación del deportista: Karate-do (2021-2024)* [Documento institucional]. INDER.

Sastre Fácila, V. (2023). *Análisis observacional del kumite en la iniciación al karate* [Tesis doctoral, Universidad de La Rioja].
<https://dialnet.unirioja.es/servlet/tesis?codigo=309445>

Sastre, V., Arana, J., Lapresa, D., Ibáñez, R., & Anguera, M. T. (2022). Análisis del combate en la iniciación al karate: Ejemplo de utilización de árboles de decisión en metodología observacional. *Cuadernos de Psicología del Deporte*, 22(2), 247-257.
<http://revistas.um.es/cpd>

Sastre, V., Lapresa, D., Arana, J., Ibáñez, R., & Anguera, M. T. (2021). Observational analysis of technical-tactical performance in initiation to combat in karate. *International Journal of Performance Analysis in Sport*, 21(1), 126-138.
http://www.observesport.com/desktop/images/docu/O0hnrw_xrhW0NpJI ERw8PMHgsTjs0-Qz.pdf

Suárez Calderón, A., Terry Rodríguez, C. E., & Stable Bernal, Y. (2022). Validación de encuesta para el control y evaluación de elementos técnico-tácticos de karatecas 11-12 años. *GADE: Revista Científica*, 2(3), 306-317.
<https://doi.org/10.63549/rg.v2i3.132>

Suárez Calderón, A., Terry Rodríguez, C. E., & Stable Bernal, Y. (2023). Estado del control y la evaluación de los elementos técnico-tácticos de los karatecas 11-12 años. *Universidad y Sociedad*, 15(1), 199-207.
<https://rus.ucf.edu.cu/index.php/rus/article/view/3532>

Villavicencio Beldarraín, C. D. (2021). *Comportamiento de los elementos técnico-tácticos del tsuki waza de las karatecas en la actividad competitiva* [Tesis de diploma, Universidad de Cienfuegos]. <http://biblioteca.ucf.edu.cu/biblioteca/>

Conflict of interest:

The authors declare no conflicts of interest.

Authors' contribution:

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



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