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Methodology for developing defensive tactical skills in handball goalkeepers aged 13-15 years

*[Metodología para desarrollar habilidades tácticas defensivas en las porteras de
balonmano categoría 13-15 años]*

*[Metodología para desarrollar habilidades tácticas defensivas en las porteras de
balonmano categoría 13-15 años]*

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ABSTRACT

This study stemmed from the theoretical, methodological, and practical limitations identified in the tactical preparation process for handball, specifically regarding the development of defensive tactical skills in goalkeepers aged 13-15. These limitations included a lack of pathways and procedures that would demonstrate an integrated approach, reflecting the inadequate defensive tactical performance of goalkeepers in training sessions and game situations. Consequently, this finding led to the formulation of the research problem: How can we contribute to the development of defensive tactical

skills in handball goalkeepers aged 13-15? To address this, the objective was to develop a methodology to contribute to the development of defensive tactical skills in handball goalkeepers aged 13-15. This methodology is structured with a theoretical framework, comprising a legal and conceptual section, and an instrumental section consisting of phases, actions, procedures, and recommendations. It is supported by hierarchically organized complementary exercises, in accordance with the contemporary demands of this sport at the international and national levels, revealing its integrative approach to functionality. Different scientific methods – theoretical, empirical, and mathematical and/or statistical – were applied during the research. The relevance of the proposal was assessed through consultation with specialists, who gave their favorable opinions; its application in social practice within handball training for the development of defensive tactical skills in goalkeepers aged 13-15 years was recommended.

Keywords: methodology, tactical skills, defensive tactics, goalkeepers, handball.

RESUMEN

El presente trabajo partió de las limitaciones en el orden teórico, metodológico y práctico que se detectaron en el proceso de preparación táctica del balonmano para contribuir al desarrollo de habilidades tácticas defensivas en las porterías de categoría 13-15 años, carencias de vías y procedimientos para tales propósitos que denoten un enfoque integrador; todo ello es el reflejo del inadecuado desempeño táctico defensivo de las porterías en las unidades de entrenamiento deportivo y situaciones de juegos. En consecuencia, con este resultado, se formuló el problema de investigación: ¿Cómo contribuir al desarrollo de habilidades tácticas defensivas en las porterías de balonmano categoría 13-15 años? Para su solución, se trazó como objetivo elaborar una metodología para contribuir al desarrollo de habilidades tácticas defensivas en las porterías de balonmano categoría 13-15 años. La misma, se estructura con un aparato teórico, contenido de un cuerpo legal-conceptual y otro aparato instrumental que consta de fases, acciones, procedimientos, recomendaciones; se apoya con ejercicios complementarios organizados jerárquicamente, en correspondencia con las exigencias

contemporâneas de este deporte a nivel internacional y nacional, lo que revela su enfoque integrador en su funcionalidad. Se aplicaron diferentes métodos científicos: teóricos, empíricos y matemáticos y/o estadísticos durante la investigación. La pertinencia de la propuesta fue valorada mediante la aplicación del método de consulta con especialistas, los cuales dieron sus opiniones favorables al respecto; se recomendó su aplicación en la práctica social dentro del entrenamiento del balonmano para el desarrollo de habilidades tácticas defensivas en las porterías de categoría 13-15 años.

Palabras clave: metodología, habilidades tácticas, táctica defensiva, porterías, balonmano.

RESUMO

Este trabalho surgiu das limitações teóricas, metodológicas e práticas identificadas no processo de preparação tática para o andebol. O objetivo foi contribuir para o desenvolvimento de competências táticas defensivas em guarda-redes dos 13 aos 15 anos, destacando a inexistência de caminhos e procedimentos para tais fins que demonstrem uma abordagem integrativa. Isto reflete o desempenho tático defensivo inadequado dos guarda-redes em sessões de treino desportivo e situações de jogo. Consequentemente, fue formulado o problema de investigação: Como podemos contribuir para o desenvolvimento de competências táticas defensivas em guarda-redes de andebol dos 13 aos 15 anos? Para abordar esta questão, o objetivo foi desenvolver uma metodologia para contribuir para o desenvolvimento de competências táticas defensivas em guarda-redes de andebol dos 13 aos 15 anos. A metodologia está estruturada com um enquadramento teórico, compreendendo um corpo jurídico e conceptual, e um enquadramento instrumental composto por fases, ações, procedimentos e recomendações. A metodologia é sustentada por exercícios complementares organizados hierarquicamente, em consonância com as exigências contemporâneas do desporto nos planos internacional e nacional, revelando a sua abordagem integrativa da funcionalidade. Diversos métodos científicos – teóricos,

empíricos, matemáticos e/ou estatísticos – foram aplicados durante a pesquisa. A relevância da proposta foi avaliada através da consulta de especialistas, que emitiram pareceres favoráveis. Além disso, recomendou-se a sua aplicação no treino prático de andebol para o desenvolvimento de competências táticas defensivas em guarda-redes dos 13 aos 15 anos.

Palavras-chave: metodologia, habilidades táticas, táticas defensivas, guarda-redes, andebol.

INTRODUCTION

Handball is one of the most practiced ball sports in the world and specifically in Europe; however, it is very popular among Cuban fans, which influences its practice at different levels of the sports pyramid and the teaching system.

After various studies and a review of theoretical, practical, and methodological contributions, it has been confirmed that the goalkeeper position is one of the most dynamic, as it is a key element in achieving victory. Many authors have explored this topic in different research projects, both internationally and nationally.

From this perspective, Hansen *et al.* (2017) consider that: "the quality of the goalkeeper strengthens the performance of their teammates, undermining the morale of rivals with good saves and leading them to avoid taking responsibility for shots on goal by attackers." This aspect is consistent with achieving adequate harmonization in defensive tactical preparation during sports performance, which is achieved through the development of defensive tactical skills in goalkeepers at the school level.

The work of Quiñones *et al.* (2020) argues that the current conditions of elite play are characterized by an increase in the speed of actions and decision-making in both the offensive and defensive phases of the game. This is further compounded by the predominance of tactical interactions between two or three players in smaller spaces,

leading to greater use of collective tactical resources and modifications to the structure of the offensive play.

The above statement constitutes a line of work for the practice of this sport in the initial ages with a futuristic perspective and in accordance with the sports pyramid established in the teaching system in Cuba.

On the other hand, authors such as Gómez, Angosto, López & Antúnez (2021) summarize that the performance of the handball goalkeeper is fundamental to the outcome of the matches and the final classification of the teams, which confirms the need and importance of the development of defensive tactical skills in handball goalkeepers in the 13–15-year age category.

Recently, Vizcay; Ramos; Olivares & Quiñones (2022), in their research, which relates a test to evaluate the specific speed in handball goalkeepers of the Cuban national pre-selection, highlight the determining role of this position because it is a variable sport, so we agree with what was stated by the aforementioned authors; in addition, it is of great scientific value and as a theoretical reference for this work.

Currently, there are limitations in proposals, which in their construction assume a systemic structural and functional approach, based on the establishment of a theoretical apparatus, with a legal-conceptual body and another instrumental apparatus that consists of phases, actions, procedures, recommendations, supported with complementary exercises organized hierarchically, which reveals its integrative approach in the development of defensive tactical skills in handball goalkeepers in the 13-15 year category.

Taking into account the shortcomings shown and to solve the problem detected, the following objective is proposed: to develop a methodology to develop defensive tactical skills in handball goalkeepers in the 13–15-year age category.

MATERIALS AND METHODS

In order to ascertain the current state of development of defensive tactical skills in handball goalkeepers aged 13-15, the following aspects are taken into account to obtain criteria:

- Reflection of the development of defensive tactical skills in handball goalkeepers aged 13-15 years in the established regulations, as well as in the Comprehensive Athlete Preparation Program (PPID).
- Managers' criteria on the guidance received for the development of defensive tactical skills in handball goalkeepers aged 13-15 years.
- Coaches' criteria regarding the development of defensive tactical skills in handball goalkeepers aged 13-15 years.
- Criteria of handball goalkeepers in the 13-15-year age category regarding the development of defensive tactical skills.
- Preparation of coaches to develop defensive tactical skills in handball goalkeepers aged 13-15 years.

Scientific methods are assumed in the research, such as:

Theoretical: during the process of consultation and critical evaluation of the literature and specialized documentation, in the application of other methods of scientific knowledge, for the determination of the theoretical elements, in the results obtained in the diagnostic stage and during the introduction into practice. In the determination of the structural and functional elements of the methodology, and the relationship between its components.

Empirical methods: to corroborate the existence of the problem and specify the overall results of the development of defensive tactical skills in handball goalkeepers aged 13-15, based on training sessions and control tests; by developing and applying an observation guide. Expert opinion: to gather expert opinions on the methodology, in order to evaluate its feasibility.

Statistical and/or mathematical methods: descriptive (calculation of proportions) and inferential analysis were used to quantify the results of the instruments applied throughout the research process, to process the data obtained, and to create tables and graphs that served to characterize and describe the results. These scientific methods were applied to a population consisting of five handball coaches and seven goalkeepers in the 13-15 age category, in Guantánamo province.

RESULTS AND DISCUSSION

The analysis of the diagnosis that was applied allowed us to consider that the fundamental aspect of the research is the deficiencies in the theoretical, methodological and practical order of the coaches to develop defensive tactical skills in the handball goalkeepers of the 13–15-year category, which in their procedure denote an integrative approach.

In accordance with the above, it is proposed to operationalize the variable: the development of defensive tactical skills in handball goalkeepers in the 13–15-year age category, as the level of preparation of coaches for the development of defensive tactical skills in handball goalkeepers in the 13-15 year age category; for this, two dimensions are assumed: theoretical-methodological knowledge of defensive tactics and defensive tactical qualities.

The dimension of theoretical-methodological tactical-defensive knowledge refers to the mastery of the theoretical platform of the established regulations, as well as the degree of use of methodological ways and procedures for the development of defensive tactical skills in handball goalkeepers in the 13–15-year age category.

From that perspective, the dimension of defensive tactical qualities is defined as the quality and effectiveness with which an adequate defensive tactical thinking is shown during their performance and execution in the various game situations.

Both dimensions were evaluated based on the parameterization of the following indicators, corresponding to the categories: high (A), medium (M) and low (B).

Dimension 1: Theoretical and methodological knowledge of defensive tactics:

Indicators:

1.1. Mastery of knowledge about the theoretical, normative and methodological documents established for the development of defensive tactical skills in handball goalkeepers in the 13-15-year age category.

1.2. Level of application of scientific methods, approaches, and procedures for the development of defensive tactical skills in handball goalkeepers aged 13-15. 1.3. Degree of alignment of the objectives planned during the tactical preparation process to contribute to the development of defensive tactical skills in handball goalkeepers aged 13-15 in game situations.

Dimension 2: Defensive tactical qualities Indicators:

2.1. Level at which the development of tactical skills and the application of scientific methods, paths and procedures are conceived during the different game situations that are essentially defensive in the goal position.

2.2. Degree to which it promotes the active participation of handball goalkeepers in game situations and how it contributes to the development of defensive tactical skills in handball goalkeepers aged 13-15 years.

2.3. Quality of the planning of the development of defensive tactical skills in handball goalkeepers aged 13-15 years, the ways and forms used in training sessions to evaluate in game situations.

The following are the results obtained from the investigations carried out regarding each of the aforementioned aspects, presented in an integrated manner: In the established regulations concerning the defensive tactics of handball goalkeepers in the 13-15 age

category, and in the regulations established for sports training, it was found that there are specific guidelines regarding the methods and procedures for achieving an accurate diagnosis where defensive tactical thinking can be developed; however, these are insufficient from a methodological standpoint that demonstrates an integrative approach to the development of defensive tactical skills. This is the case with the athlete preparation program, 2021 edition.

In certain regulatory documents related to this topic, everything concerning some theoretical aspects of its conceptualization is reaffirmed in a general way, without providing guidelines or clarifications to guide the coach of this sport, which shows that it is insufficient in terms of the ways that should be applied to improve the defensive tactics of handball goalkeepers in the 13–15-year age category.

Upon observing the meetings, methodological preparations, and other activities of that nature, it was confirmed in 29 of them that each coach inadequately executes the methodological work to develop defensive tactical skills, without fostering a debate or consensus on what to continue in sports training, which hinders its development, as well as limiting the application of ways, procedures, and indicators for its realization.

It was found that the handling, analysis and discussion of the documents contained that guide this process is insufficient; they only study the specific aspects to plan their sports training sessions, derived from the general guidelines of the different levels of Inder.

In the analysis of the controlled training sessions, they showed insufficient mastery of these documents and their materialization in the different planned activities, as well as in the collective debates with the rest of the coaches.

Regarding the mastery of normative documents for the development of defensive tactical skills, three of the coaches reported planning it sporadically and spontaneously, without prior self-preparation that would allow them to direct this link according to the tactical preparation process.

Five coaches responded that the defensive tactical preparation of goalkeepers is inadequate due to a lack of guidance provided to develop strategies that prepare them for self-assessment and subsequent improvement. They agreed that the methodological work developed in the coaches' professional development program is limited with respect to the development of defensive tactical skills in 13–15-year-old handball goalkeepers, as they lack adequate professional training for this purpose.

The above was corroborated through observations of the different methodological activities. In 32 of them, an unsystematic, improvised analysis was carried out, without prior planning, coordination, or guidance aimed at improving defensive tactics in sports training.

Regarding the ways of planning activities, routes and procedures during sports training, they lack application at each moment; which requires immediate attention from the use of a methodological approach to contribute to the development of defensive tactical skills in handball goalkeepers in the 13–15-year age category.

On the other hand, two coaches sometimes state that they plan by applying assessments in the order of physical preparation, alluding to the tactical component, without achieving a concrete result in offensive tactical preparation.

The results presented correspond to those obtained from 47 observations of sports training sessions. A review of the athlete preparation programs revealed shortcomings in the use of a methodology for developing defensive tactical skills in handball goalkeepers aged 13-15.

After noting the above deficiencies, it is necessary to find a methodological solution, so below is a methodology for developing defensive tactical skills in handball goalkeepers aged 13-15 years.

Regarding the theoretical foundations of the methodology, we agree with the contributions of De Armas and Valle (2011), who state that the most common approach begins with a diagnosis of the current situation or the aspect of it that is to be

transformed. A prognosis of the desired outcome is also assumed, which may or may not be formulated as objectives. From this, the methodology/alternative is established, tested in practice, and the resulting outcome is presented. These contributions are contextualized within the tactical preparation process in handball as a scientific result.

Taking into account the above, the methodology aims to enable handball coaches with ways and procedures to develop defensive tactical skills in handball goalkeepers aged 13-15.

It is structured in four fundamental stages (1st awareness for the development of defensive tactical skills, 2nd). Characterization of the development of defensive tactical skills, 3rd. Execution of the development of defensive tactical skills and 4th. These stages reveal their systemic, structural and functional relationships, supported by complementary exercises (Figure 1).

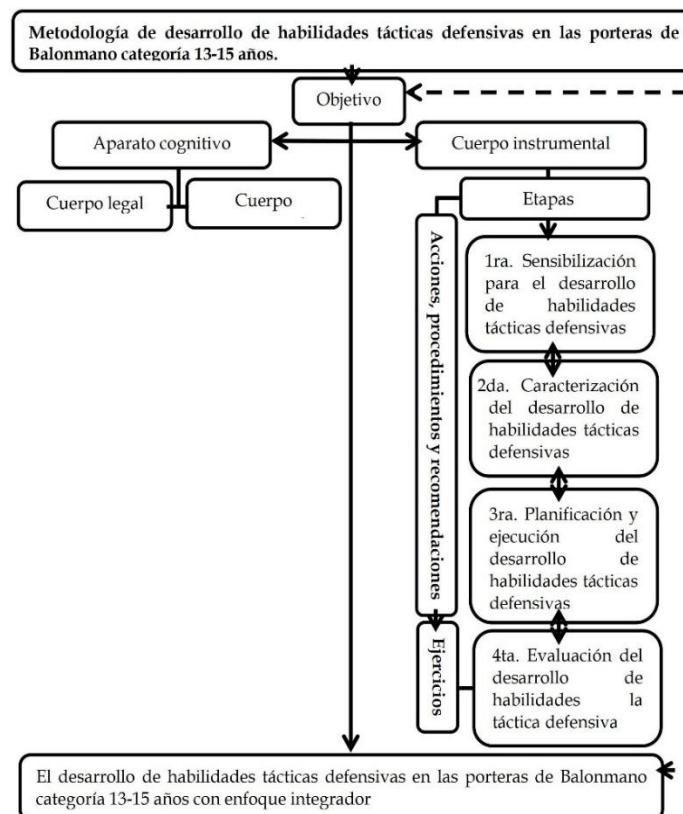


Fig. 1. - Graphical representation of the methodology

Description of the stages of the instrumental body

In the first stage, a prior reflective analysis must be carried out with the different human resources that will intervene in the materialization of the proposal and its objective is to sensitize the coaches from a reflective and cooperative thinking to contribute to the development of defensive tactical skills in handball goalkeepers of category 13-15 years.

General actions of the stage:

Conduct a preliminary reflective analysis with the different human resources that will be involved in the materialization of the proposal.

To raise awareness among handball coaches so that they approach their roles with reflective thinking.

This action identifies the procedures to be taken into account:

Establish a conversation to obtain criteria on the level of willingness and commitment of handball coaches to take on the development of defensive tactical skills in handball goalkeepers aged 13-15.

Determine the regularities that constitute barriers to its correction.

Investigate the characteristics of the teachers and gatekeepers.

Recommendations:

Conduct methodological work meetings with the purpose of raising awareness among human resources.

Key topics to be addressed in this action:

- Methodological guide to handball for coaches.
- Current conceptions about the defensive tactical preparation of the goal in the female sex.

- Analysis of defensive behavior in handball through performance indicators and effectiveness indices.
- Analysis of defensive tactical behavior in school handball games in the goal area.
- Effectiveness of handball goalkeepers in the last women's world championships.
- Goalkeeper-player in situations of numerical disadvantage in offensive handball:

Penalty or advantage?

Participatory techniques with a group dynamic should be used throughout all the proposed stages.

The stage is explained below, which has an interdependent relationship with the rest.

In the second stage: characterization of the development of defensive tactical skills: As its name indicates, its purpose is the defensive tactical characterization, so a diagnosis is applied to determine or know the real state of the human and material resources that will intervene in the process of defensive tactical preparation of the 13–15-year-old high performance goalkeepers from concrete actions.

The main actions include:

Development of instruments for the application of a comprehensive diagnosis that responds to the proposed objectives (date: at the beginning of each stage; responsible parties: researcher and tutor).

Application and tabulation of the comprehensive diagnosis. (date: at the beginning of each stage; responsible parties: researcher and tutor).

Determination of the regularities derived from the previous step. (date: at the beginning of each stage; responsible parties: researcher and tutor).

Training of the human resources that will intervene in this process based on the different forms of improvement with the approach to the selected topics that are presented below (date: first week of the month in which it is implemented)

(Those responsible: researcher and tutor).

At this stage, the results of the diagnosis of the object's actual condition must be assessed in order to proceed to the next stage.

Regarding the 3rd point, Defensive tactical planning and execution, its objective is to coherently optimize the plan to be executed, taking into account its integrated approach; it will be implemented in the following way:

General actions:

- Organize a methodological meeting at the provincial level to explain the characteristics of the methodological work to be carried out by the different subsystems and to achieve greater concreteness of the tasks to be undertaken (second week; responsible: researcher and tutor).
- Plan the different subsystems or organizational levels of the methodological work based on the training tasks of handball coaches (September; responsible: researcher and tutors).
- Planning of complementary exercises that support the methodology.
- (Those responsible: researcher and tutor).

In accordance with the above, it is suggested that, in order to achieve the development of defensive tactical skills, the coach should take into account:

- Have full mastery of the content of the category's teaching program.
- Have theoretical and practical knowledge of the technical fundamentals of handball.
- Having knowledge of the methodology for teaching the technical elements of handball in working with goalkeepers.

- To learn the methodology for developing defensive tactical skills with goalkeepers.
- Select the methods and means to develop defensive tactical skills

Development of the first two actions of the third stage:

The researcher considers it important to propose a plan of the methodological work methods with their respective structure, which testifies to the methodological character or nature of the proposed alternative and its integrative approach, organized by blocks, activities, workshops with their denotation according to the block to which they correspond; these are presented below:

Subsystems or organizational levels of methodological work for training that begins with handball coaches:

Activity 1: Conference. "The tactical performance of goalkeepers during handball games. Historical trends."

Contents: Historical background of tactical preparation in sports training. Current trends and perspectives.

Objectives: to explain the historical background of tactical preparation in sports training from a periodization with its respective indicators to reach the main concepts, regularities and current trends.

Teaching method: expository and illustrative.

Procedures: conversation, explanation, demonstration.

Teaching aids: blackboard, lecturer's voice, personal computer (PC), and others.

Methodological guidelines:

The content is organized logically and in stages for contextualization. Up-to-date materials and bibliographies on these topics will be used, both in print and digital formats. It is important to make comparisons between each stage and draw conclusions about the main patterns and trends in order to substantiate or characterize tactical preparation during sports training. Methods of control and evaluation:

Teams will be formed to present their assessments of the analysis, and participants will be guided to submit a written or digital report for later presentation. The use of new information and communication technologies will be evaluated.

Activity 2. Defensive tactical preparation of the goal.

Contents: Defensive tactical preparation. Its theoretical foundations. Importance of its development in handball.

Objectives: to analyze the main definitions about tactical preparation, with emphasis on the defensive component of school goalkeepers.

Teaching methods: partial search.

Procedures: conversation, explanation, demonstration.

Teaching aids: blackboard, lecturer's voice, PC and others.

Methodological guidelines:

The moderator will create a favorable atmosphere before the activity begins. A video of the most recent games held this year in the eastern region will be shown. An observation guide will be organized in a logical, step-by-step manner for contextualization; updated materials and bibliographies on these topics will be used, both in print and digital formats. Participants will be given advance guidance on the essential bibliographies to be used. Methods of control and evaluation:

Teams will be formed to assess the analysis and will be guided to submit a written or digital report for later presentation. The use of new information and communication technologies will be evaluated.

Activity 3. Workshop. The handball goalkeeper. Fundamental elements for her offensive tactical preparation with an integrated approach.

Contents: Fundamental definitions of goalkeeper training. Its theoretical framework.

Objectives: to analyze the main definitions regarding the different trends in goalkeeper training.

Teaching methods: investigative.

Procedures: conversation, explanation, demonstration.

Teaching aids: blackboard, lecturer's voice, PC and others.

Methodological guidelines:

The content is organized logically and in stages for contextualization; updated materials and bibliographies on these topics will be used, both in print and digital formats. The essential bibliographies to be used will be recommended in advance so that students can delve deeper into the following tactical aspects that the goalkeeper must master:

Workshop 1.1. Technical and tactical elements that must be mastered:

- Fundamental position.
- Postures and displacements (center-extremities).
- One-handed stops (center-ends).
- Two-handed stops (center-ends).
- One-legged stops (center-outsides). Jumping stops (center).
- Counter-attack passes.
- Field player technique.

All of this is part of a specific training structure that is presented in the following diagram (Figure 2):

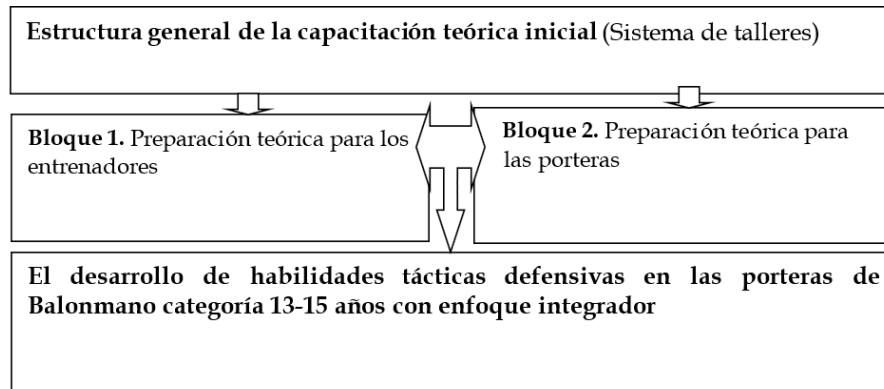


Fig. 2.- Specific training structure

Finally, the 4th Evaluation of the development of defensive tactic skills: the following actions are proposed which are complementary, since, in each planned structure, at each moment of execution, forms of control and evaluation are proposed according to the scientific methods presented above regarding the initial diagnosis, as well as the processing of the Kinovea biomechanics software.

General actions of the stage:

To subject the methodology for developing defensive tactical skills in handball goalkeepers aged 13-15 to the evaluation of its impact through its conception and implementation.

Compare the results achieved with the application of the methodology to develop defensive tactical skills in handball goalkeepers aged 13-15 years.

To develop the necessary feedback details of the methodology to develop defensive tactical skills in handball goalkeepers aged 13-15 years.

To assess the quality of the methodology for developing defensive tactical skills in handball goalkeepers aged 13-15, based on the changes made in the performance of the goalkeepers in their different game situations and competitions.

Procedures:

Compare the individual and overall results of defensive tactical thinking of handball goalkeepers aged 13-15 years.

- Graph and create tables with the results obtained.
- Pedagogical tests of tactics.
- Viewing videos of international competitions.

Process the qualitative and quantitative aspects for feedback on the development of defensive tactical skills in handball goalkeepers aged 13-15 years during the methodological work carried out, its correction and project new actions.

After explaining the structure of the methodology, the considerations made by Vizcay, Ramos, Olivares & Quiñones (2022) are revisited regarding a test to evaluate the specific speed in handball goalkeepers of the Cuban national pre-selection, which is crucial to influence the transformation of defensive tactical thinking in goalkeepers who play this position because it is a variable sport, and therefore we agree with what the aforementioned authors have stated.

Furthermore, this work reflects the search for proposals that, in their construction, assume a systemic, structural and functional approach, based on the establishment of a theoretical apparatus, containing a legal-conceptual body and another instrumental apparatus consisting of phases, actions, procedures, recommendations, supported with complementary exercises organized hierarchically, with prior training, all structured by blocks, which reveals its integrative approach for the development of defensive tactical skills in handball goalkeepers in the 13-15 year category.

This proposal aligns with current trends in goalkeeper training, where authors such as García et al. (2023) emphasize the need for methodologies adaptable to resource-constrained contexts, without sacrificing the effectiveness of the logical steps required to achieve the proposed objectives. In accordance with this approach, the contribution presented in this research explores these avenues.

CONCLUSIONS

Studies of the theoretical and methodological foundations of the offensive tactical preparation process facilitated the structuring of a methodology as a theoretical and practical contribution, based on a systemic approach.

The proposed methodology constitutes a way to contribute to the development of defensive tactical skills in goalkeepers of the 13–15-year category.

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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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