

***The introduction of innovation through technical scientific services specialized  
in high performance sport.***

***La introducción de la innovación mediante los servicios científicos técnicos  
especializados en el deporte de alto rendimiento.***

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***ABSTRACT***

The research deals with an essential aspect for high performance sport, the introduction of innovation through specialized technical scientific services. This marked the intentionality of the design of a theoretical-methodological conception that, since a renovating approach, is maintain on principles of support for innovation. The preliminary assessment of its feasibility and effectiveness was demonstrated, through the methodological triangulation of a pre-experiment, as well as in the validation criteria issued by the experts consulted and the result of the socialization workshop applied in the current and specific conditions of the EIDE. “Rafael Freyre Torres” from Guantánamo.

***Keywords***

Innovation; Specialized technical services; Theoretical-methodological conception; Advanced environments; Strategic surveillance.

***RESUMEN***

La investigación aborda un aspecto esencial para el deporte de alto rendimiento, la introducción de la innovación mediante los servicios científicos técnicos especializados. Ello marcó la intencionalidad del diseño de una concepción teórico-metodológica que, desde un enfoque renovador se sustente en principios de apoyo a la innovación. La valoración preliminar de su factibilidad y efectividad quedó demostrada, mediante la triangulación metodológica de un pre-experimento, así como en los criterios de validación emitidos por los expertos consultados y el resultado del taller de socialización aplicado en las condiciones actuales y concretas de la EIDE “Rafael Freyre Torres” de Guantánamo.

***Palabras clave***

Innovación; Servicios técnicos especializados; Concepción teórico-metodológica; Entornos de avanzada; Vigilancia estratégica.

## INTRODUCTION

The dizzying scientific-technical development in contemporary times makes it possible to obtain scientific knowledge and technological results that demand constant creative and innovative activity to maintain progress. Under these conditions, the changes generated since the mid-twentieth century converge in new conceptual frameworks through which novel theories are established, which promote the search for the real and completely unknown, and consequently innovation.

From this point of view, globalization and the information age are the main paradigms that currently indicate the parameters and guidelines to follow in an increasingly interrelated world. These changes constitute challenges for existing institutions and for their training processes. (Collazo and Col. 2006, p.211).

A vital recommendation in these circumstances is to keep in mind as premises: innovate or die, investigate reality or stagnate. In this regard, the introduction of innovation guarantees the concretion of optimal results and the improvement of the processes that take place in sports institutions, especially those aimed at high performance.

Innovation as a product or service is presented as a new incremental or radical quality, and once accepted produces impacts; be it economically, socially or environmentally. In this sense, an innovative institution is capable of transforming technological scientific advances into new products and processes according to the needs and requirements both nationally and internationally.

At an international level, they investigate innovation Camagni. which in his theory of innovations considers it as “a new production function” (1991, p.432). For his part, Castillo states that “innovating implies not only the production of a new product or form of production, it is also innovated through the creation of organizations, as well as a different way of carrying out a certain task” (1999, p.116). The aforementioned authors contribute theories, conceptions and procedures about innovation from different angles.

At the national level, connote Addine and Col. (2006) which refers to didactic innovation in the teaching-learning process. For their part, Díaz-Canel & Delgado (2021) who proposes a government management model oriented towards innovation. These authors provide a broad theoretical approach to innovation.

From this perspective, the works Salazar et al. (2013) which specifies social innovation as the application of new ideas, concepts, products, services, methodologies and practices that contribute to citizens achieving a better quality of life. Likewise, Castro and Fernández (2001). Echevarria (2010) delve into responsible innovation, also considered as endogenous innovation in the municipalities so that it enables an appropriate insertion of scientific and technological advances in society.

This transformation process entails the application of methodologies, norms and principles, which allow the strengthening of the actions of managers, coaches and Immediate Perspective Athlete, (API) from a stable, dynamic environment, aimed at sports institutions being more flexible, innovative and excellent. In this regard, the Comprehensive High Performance Sports Program at EIDE "Rafael Freyre Torres" is sustained by threats to the sustainability of sports results achieved in the international arena.

The introduction of innovation through technical scientific services specialized in high performance sports requires the planning, organization, execution and control of all the activities to be carried out in this institution to achieve this goal. However, the existence of limitations is verified, which lacerate its quality, since the main scientific results achieved in the sports field and that constitute innovations are not always taken into account despite their importance and necessity.

The foregoing was corroborated in the empirical investigations carried out during this investigation, as well as by the author's experience as a provincial methodologist of the Provincial Directorate of Sports, Physical Education and Recreation in Guantánamo who attends teaching. Among the main shortcomings detected, the following stand out:

- Limitations in the Comprehensive High Performance Sport Program of the necessary theoretical, practical, and methodological substrate for the introduction of innovations, manifested in behavior, as well as in the actions of managers, coaches and API in praxis.
- Exiguous concretion of strategic alliances between the scientific pole of the organisms and territories with the EIDE that allows to put into function of the sport the existing advanced pedagogical, scientific and technical experiences.

- Lack of a theoretical and methodological conception that, from a renovating approach, enables the introduction of innovation through technical scientific services specialized in high performance sports.

For all of the above, it is declared as a scientific problem: ¿How to contribute to the introduction of innovation in high performance sports in Guantanamo?

## **METHODS**

The sample chosen by simple random sampling is made up of a total of 30 APIs representing 50% of the population, 32 coaches (100%) and 31 managers (100%).

For the development of this research, methods of the theoretical level were used, such as the analytical-synthetic one, which allowed us to discern the main theoretical elements about the improvement of innovation and the elaboration of the theoretical-methodological conception in the specific conditions of high performance sport. The Inductive-deductive allowed starting from the possibilities offered by the implementation of specialized technical scientific services for the improvement of innovation, as well as the structural-functional systemic approach for the determination of the structural and functional elements of the theoretical-methodological conception, and the establishment of relationships between its components.

Among the empirical ones, observation was used, which facilitated the verification of the scientific-methodological preparation for the introduction of innovation through the technical scientific services specialized in high performance sports of the EIDE "Rafael Freyre Torres". The interview that allowed to know the criteria of the specialists, the verification of their knowledge about the introduction of innovation. The criteria of experts with the objective of knowing the opinion of the experts about the theoretical-methodological conception and the methodology, in order to evaluate its feasibility.

## **RESULTS**

The proposed conception assumes the philosophical, sociological, psychological, pedagogical, and didactic foundations that derive from a knowledge system accepted as scientific truth and that give it consistency. Its new point of view, categories, principles constitute the theoretical support of the conception and its structuring responds to the introduction of innovation through technical scientific services specialized in high performance sports.

The theoretical-methodological conception for the introduction of innovation through technical scientific services specialized in high performance sports consists of the following structure: objective, rationale, new point of view, categories and characterization, which includes an explanation of the components. theoretical and methodological, which are exposed from the relationship that links them.

Its foundation is based on revealing the essence of the introduction of innovation in the conception, alluding to the renovating approach which leads to the development of emerging behaviors and a renovating mode of action. For this, the introduction of innovation is considered as a process and result, which implies changes and any process of change generates resistance.

The elaborated theoretical-methodological conception consists of two components, one theoretical and the other methodological. The theoretical component is made up of the following categories: Innovative incentives for high performance, Specialized technical scientific services with a renovating approach, Advanced environments, as well as Strategic surveillance and monitoring of technical scientific advances. The characterization of each of them is offered, supported by the three principles of support for innovation elaborated.

For its part, the methodological component covers the stages of the methodology for the introduction of innovation through technical scientific services specialized in high-performance sport: diagnostic stage for the introduction of innovation with its respective phases, among which stand out that of awareness, obtaining and processing information; action planning stage for the introduction of innovation; as well as the stages of instrumentation and evaluation of actions for the introduction of innovation. Also included are methodological details by sports for the introduction of innovation and advanced projections. The following schematic representation allows a better understanding of the proposed theoretical-methodological conception.

The theoretical component allows to systematize the essential relationships that are established between the different theoretical elements that contain the conception. It bases its foundations on the new point of view from which the introduction of innovation is conceived and the relationships that are established between this new look and the categories that, in the epistemological order, are approached, in close relation with the declared principles and that serve as support for the development of three principles of support for innovation.

In the theoretical modeling of the conception in this thesis, according to the analyzes carried out, innovative incentives in high performance become the starting point, defined as the stimulation process that encourages the search for advanced innovations that facilitate modification. behaviors and modes of action. And, it is that an incentive, as its name suggests, encourages, motivates the desire to action.

In this sense, there are several factors that constitute impulses for the development of innovative incentives in high performance sport, they are:

- The generation of ideas: ideas are new products, concepts, perspectives, and their origin does not have to be limited to the interior of the institution. Employee creativity is an important source of ideas, but not the only one. The institutions relate to collaborators from other institutions, all of whom can be a source of ideas.
- Structured processes: the capabilities and resources available in high-performance sports institutions must be known to accelerate the introduction of the innovative process. Therefore, the determination of performance indicators and delimiting the precise objectives for the measurement of the result of all the investment is essential.
- Leadership: the leader must be clear about his mission and strategic direction. Also, what role does innovation play in institutions aimed at high performance? What type of innovation is sought? What change is expected to be obtained from the implementation of a certain innovation? These are questions to answer. However, being an effective leader requires the establishment of well-defined responsibilities so that everyone's job does not become anyone's job.
- Trained employees: new products, services and technologies appear constantly, which requires active training to adapt to new changes. Part of this training depends on the will of the people; but on the other side of the institution, it can be done through the rotation of positions, the financing of courses, as well as specialized technical scientific services.
- The users: they are the people to whom the results of the innovations and their generalization are directed through the technical scientific services specialized in the specific case of this thesis. They, based on their motivations and perspectives, lead to the introduction of innovation in high performance sports. For this reason, a

fundamental element of the innovative process is human resources. So, innovation implies having the right people doing what is necessary at the right time.

- The relations between the university and the scientific poles of the organisms (ideas, capacities and financing) as well as the territories: they constitute the element that links and allows their alignment based on the role that each one of these actors plays in innovation. Therefore, a better articulation of the relations between those involved is necessary, moving from a system of relations based on the transfer of knowledge to its co-production.
- Social responsibility: enables the pieces that make up innovation, among which governments and local leaders stand out, to work together to introduce innovations.

This collaboration has a double function, first, governments must promote local idols. For the adequate implementation of specialized technical scientific services, advanced collaborative environments are required, considered as the space that allows increasing efficiency, competitiveness and response capacity. This implies the application of a set of procedures and integrated actions that respond to a certain context, given that the success of innovation in an institution depends almost entirely on the preparation and training of human resources, as well as the development of skills (knowledge and skills) for innovation.

What it is about is renewing the skills to be developed in people in relation to innovation, which are related to creativity and continuous improvement, teamwork, risk assumption, relationship building, project management, implementation and intrapreneurship. All of the above is possible, if the environment is collaborative and advanced, aimed at developing people's commitment, by fostering passion for what they do, creating initiatives, spaces and conditions for the incorporation of best practices; where transparency, collaboration and meritocracy are the factors of progress.

Examples that illustrate how to implement the proposal:

Innovation to introduce: Kinematic analysis model of the different types of pitches to perfect the pitching technique.

1. Opening specialized technical scientific service

Objective: to train Baseball managers and coaches about the state of the science on the kinematic analysis model of the different types of pitches to improve the pitching technique.

Didactic-methodological procedure:

- Start by asking what are your expectations regarding the service?
- Select an activity recorder.
- Grouped into teams, those present will be given a work sheet with different indications. For this, the concept of model will be based on, then the definition of kinematic analysis model will be analyzed, emphasizing the terms that comprise it.
- It will be indicated that they incorporate the missing word(s) related to the topic, and give their arguments.
- These terms must be organized taking into account their relationship with the concepts addressed and then elaborate new definitions with them in correspondence with their points of view.
- Next, these concepts will be related according to their complexity and the explanation of why they are organized in this way.

Finally, this first service will inform them of the state of the science regarding the different pitches, their analysis based on the model that is proposed to be introduced, and they will be asked to exemplify how it manifests itself in their sport, in addition to specifying their incidence in practice.

## 2. Specialized technical scientific experimentation service

Objective: enable Baseball managers and coaches to implement the kinematic analysis model of the different types of pitches based on the improvement of the pitching technique.

Didactic-methodological procedure:

- Start with the following question: ¿what are the expectations regarding the innovation that is introduced?
- They will be asked to elaborate an idea from the content covered in the previous service, this can be: conclusive, inclusive or simply explanatory.
- Then they will express the idea developed, which will serve as a common thread throughout the service, the best ideas formulated will be chosen and expressed in plenary.
- The model of kinematic analysis of the different types of launches is demonstrated.
- Grouped into teams, they will be asked to develop game situations where the kinematic analysis model of the different types of shots is used. These actions must be implemented in sports practice with their APIs.

- Upon completion, the registrar must read the record of events, assessing the activity and granting the evaluation to all participants taking into account the determined criteria.

Note: criteria for evaluation

- Fit to theme.
- Originality.

This service will inform them of the state of the science about the different launches, they will be asked to give examples of how each one is manifested in the analysis model and what its incidence would be in practice.

### 3. Completion specialized technical scientific service

Objective: to assess the implementation of the kinematic analysis model of the different types of pitches for the improvement of pitching technique in Baseball.

Didactic-methodological procedure:

- The selected coach is informed of the following orders in a worksheet: you have the responsibility to start or end today's service, for this you have to complete different duties: resume the main aspects addressed in previous matches and ensure the start or what was addressed during it should be responsible for the conclusions.
- Everyone present will be given a strip of paper to write their criteria about the services received where they must issue their degree of satisfaction and proposals for their improvement (your name should not appear).
- They will all be read in plenary, which will be taken into account for the redesign of the services received.
- The activity recorder is maintained, which reads the report of what happened during the three sessions held.

Finally, other closing techniques are recommended, such as PNI, parallel texts, among others.

## CONCLUSIONS

- The proposed theoretical-methodological conception has been supported by philosophical, sociological, pedagogical, psychological and didactic assumptions, which constitute an essential epistemological foundation to explain its development.
- In the theoretical-methodological conception, a system of dialectical relationships is established between the elements of the theoretical and methodological component, expressed in the introduction of innovation through specialized scientific services in

high performance sports, from the new point of view, principles, and the categories that comprise it.

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