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Professional development for physical education teachers in the immediate management of sports injuries

[*La superación para el profesor de Educación Física en el manejo inmediato de las lesiones deportivas*]

[*Formação continuada para professores de educação física no atendimento imediato a lesões esportivas*]

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SUMMARY

Introduction: Immediate treatment of sports injuries is crucial in the school setting, especially since teachers are often the first responders to any trauma that occurs during physical activity. However, research reveals that teachers receive little training in both initial and ongoing education programs. As a result, the quality of intervention and student safety are compromised. This research underscores the need for training and establishes a professional development framework to help teachers learn first aid and injury response teaching skills.

Objective: to design a professional development system for Physical Education teachers by evaluating competencies in the immediate management of sports injuries.

Methods: A mixed-methods approach was used. The quantitative phase involved a survey to explore the injury management and first aid skills of 30 physical education teachers, as well as the most prevalent injuries encountered in schools. The qualitative phase consisted of expert evaluation by five individuals, assessing the relevance, coherence, and feasibility of the proposed system. Descriptive statistics were combined with qualitative concordance criteria.

Results: The teachers received limited training in immediate post-injury response to sports injuries and the need for first aid training. Most reported that sprains, bruises, and muscle strains were commonly reported types of injuries, with difficulty applying the correct response in real time. Expert opinion indicated that the professional development system was relevant and useful, included clear modules, and was practical, including the preventative aspect.

Conclusions: The training of physical education teachers was insufficient. This demonstrates a significant gap in the practical management of sports injuries, and the establishment of a targeted professional learning system to address injury management is required.

Keywords: professional development; physical education; sports injuries; first aid; teacher training.

RESUMEN

Introducción: el tratamiento inmediato de las lesiones deportivas es crucial en el entorno escolar, especialmente si ese profesor es a menudo el primero en responder a cualquier trauma que ocurra durante la práctica motora. Sin embargo, la investigación revela que los profesores reciben poca formación tanto en los programas de educación inicial como continua. Como resultado, la calidad de la intervención y la seguridad de los estudiantes se ven afectadas. La investigación subraya la necesidad de formación y establece un marco de desarrollo profesional para ayudar a los profesores a aprender habilidades de enseñanza de primeros auxilios y respuesta a lesiones.

Objetivo: diseñar un sistema de desarrollo profesional para profesores de Educación Física evaluando competencias en el manejo inmediato de lesiones deportivas.

Métodos: se utilizó un enfoque mixto. Para abordar esto, la fase cuantitativa involucró el uso de un método de encuesta para explorar las habilidades de 30 profesores de Educación Física en el manejo de lesiones, primeros auxilios, así como las lesiones más prevalentes encontradas en la escuela. La fase cualitativa consistió en la evaluación de expertos por cinco individuos, evaluando la relevancia, coherencia y viabilidad del sistema propuesto. Se combinaron estadísticas descriptivas con criterios de concordancia cualitativa.

Resultados: los profesores recibieron una formación limitada en la respuesta inmediata a las lesiones deportivas postlesión y la necesidad de formación en primeros auxilios. La mayoría dijo que los esguinces, contusiones y distensiones musculares eran tipos de lesiones comúnmente reportados, con dificultad para aplicar la respuesta correcta en tiempo real. La opinión de los expertos indicó que el sistema de desarrollo profesional era relevante y útil, incluía módulos claros y era práctico, incluyendo el aspecto preventivo.

Conclusiones: la formación de los profesores de Educación Física fue insuficiente. Esto demuestra que existe una brecha significativa en el manejo práctico de las lesiones deportivas, y se requiere el establecimiento de un sistema de aprendizaje profesional dirigido para abordar el manejo de lesiones.

Palabras clave: desarrollo profesional; Educación Física; lesiones deportivas; primeros auxilios; formación docente.

RESUMO

Introdução: O tratamento imediato de lesões esportivas é crucial no ambiente escolar, especialmente porque o professor costuma ser o primeiro a responder a qualquer trauma ocorrido durante a atividade física. No entanto, pesquisas revelam que os professores recebem pouco treinamento em programas de formação inicial e continuada. Como resultado, a qualidade da intervenção e a segurança dos alunos ficam comprometidas. Esta pesquisa destaca a necessidade de treinamento e estabelece uma estrutura de desenvolvimento profissional para ajudar os professores a aprenderem habilidades de ensino em primeiros socorros e resposta a lesões.

Objetivo: Desenvolver um sistema de desenvolvimento profissional para professores de Educação Física, avaliando suas competências no manejo imediato de lesões esportivas.

Métodos: Foi utilizada uma abordagem mista. A fase quantitativa envolveu um questionário para explorar as habilidades de manejo de lesões e primeiros socorros de 30 professores de Educação Física, bem como as lesões mais prevalentes encontradas nas escolas. A fase qualitativa consistiu em uma avaliação por especialistas, realizada por cinco indivíduos, avaliando a relevância, a coerência e a viabilidade do sistema proposto. Estatísticas descritivas foram combinadas com critérios de concordância qualitativa.

Resultados: Os professores receberam treinamento limitado na resposta imediata a lesões esportivas pós-traumáticas e na necessidade de treinamento em primeiros socorros. A maioria relatou que entorses, contusões e distensões musculares foram os tipos de lesões mais comuns, com dificuldade em aplicar a resposta correta em tempo real. A opinião de especialistas indicou que o sistema de desenvolvimento profissional foi relevante e útil, incluiu módulos claros e foi prático, inclusive no aspecto preventivo.

Conclusões: O treinamento de professores de educação física foi insuficiente. Isso demonstra uma lacuna significativa no manejo prático de lesões esportivas e a

necessidade de estabelecer um sistema de formação profissional direcionado ao manejo de lesões.

Palavras-chave: desenvolvimento profissional; Educação Física; lesões esportivas; primeiros socorros; formação de professores.

INTRODUCTION

The field of Physical Education involves activities where intensity, speed, contact, or lack of motor preparation can lead to sports injuries of varying severity. In a school setting, these scenarios demand rapid and appropriate intervention to reduce danger, prevent complications, and promote student safety. However, several studies and institutional assessments show that Physical Education teachers are unable to act competently in the initial management of injuries, whether due to inadequate professional training, a lack of systematic training programs, or insufficient updating of action protocols (Abós *et al.* 2024).

Furthermore, in most existing educational systems, professional development strategies are not designed to address this need, so we can clearly see that there is an incompatibility between the real needs of teaching practice and the skills available at the time of training (Pedraza and Duarte, 2024).

This finding forms the basis of the scientific problem: physical education teachers are inadequately prepared to manage sports injuries immediately, and consequently, professional development opportunities are unavailable to develop the necessary skills. When appropriate teaching methods are not implemented, students' learning process suffers, the risk of injury during physical activity increases, and a safe environment for students is not provided.

Authors such as Peña (2023), López *et al.* (2024), Retamal *et al.* (2023) have systematized that the immediate management of sports injuries is the main skill of Physical Education

teachers, which is important because these educators are responsible for providing physical and sports activities to children, as well as to the community.

Early intervention in the immediate aftermath of an injury can greatly optimize the injury's progression, as well as the students' recovery and the reduction of long-term effects. Therefore, developing these skills is also an educational, health, and ethical imperative.

Furthermore, initial teacher training may not explore early injury care practices, which necessitates the introduction of professional development programs to improve skills, knowledge transfer, and the establishment of action protocols (Lascano, 2025).

The importance of these studies lies in their value for promoting school safety and improving the quality of physical education, thereby contributing to the well-being of the school community. At the institutional level, trained teachers can reduce the risk of civil liability, cultivate a culture of prevention, and enhance school health management.

At a scientific level, research is fundamental, and models for professional training and updates are still needed in an area of theory and methodology that continues to present challenges. Therefore, this study is academically significant due to its direct relevance to student protection, teacher professionalization, and the continuous improvement of the educational process (Delvaux, Kaux, Croisier, 2025).

Therefore, the objective of the study is: To design a professional development system to improve the capacity of Physical Education teachers in the management of sports injuries.

MATERIALS AND METHODS

Focus and type of study

This was a quantitative study designed to describe and analyze the attributes, perceptions, and preparedness of physical education teachers regarding the immediate management of sports injuries through the collection and analysis of numerical data. Because variables were not manipulated, the research design was non-experimental, descriptive, and cross-sectional, as the data were collected at a single point in time to characterize the phenomenon under study.

Population and sample

The study population consisted of 165 physical education teachers from various educational institutions in the Dominican Republic. The final sample comprised 30 teachers, selected through non-probability convenience sampling based on their availability and accessibility to participate in the study. This number was deemed adequate to describe their preparedness to manage sports injuries in schools.

Data collection instrument

The main instrument used to collect information was a structured survey. The questionnaire consisted of sections dealing with:

- 1) Sociodemographic and professional data (age, gender, years of experience, educational level).
- 2) Basic knowledge about sports injuries (types of injuries, risk factors, warning signs).
- 3) Immediate care procedures (application of first aid, use of protocols, referral).
- 4) Perception of competence and training needs.

The questions were closed-ended, with a five-level Likert scale and multiple-choice questions that allowed the responses to be characterized and quantified.

Validity and reliability

Expert judgment on each item regarding its relevance, clarity, and coherence was conducted by specialists in physical education, sports medicine, and research methodology. These included observations made before the final application.

Procedure

A digital online survey was conducted, facilitating the acceptance of its findings as data. Teachers were instructed before completing the questionnaire about the intended use of the study, the confidentiality of their responses, and the voluntary nature of their participation. Data collection took place over four weeks.

Data analysis

Descriptive statistics, including frequencies and percentages, were used to process the data. This analysis helped to identify teachers' levels of knowledge, implementation of practices, and professional development needs, particularly regarding the immediate management of sports injuries. Tables were used to present and interpret the results.

RESULTS

The increase in sports injuries in the school environment and the need for a rapid response from physical education teachers support the development of an improvement system to update knowledge and develop practical skills regarding these injuries. Appropriate and immediate attention reduces the severity of the injury, prevents further complications, and strengthens school safety. This system is based on the principle of continuous, competency-oriented learning and the integration of theory, practice, and real-life scenarios. Table 1 presents the main content and objectives of the assessment system.

Table 1. - Modules of the professional development system and their objectives

Module	Module name	Specific objective of the module
1	Fundamentals of sports injuries and first aid	Update essential knowledge on injury mechanisms, common injury types, and basic principles of immediate management.
2	Immediate assessment and decision-making in emergencies	Develop the ability to perform a primary and secondary assessment of the injured student, identifying warning signs and priority decisions.
3	Immobilization and functional bandaging techniques	To train the teacher in the correct application of basic immobilizations and functional bandages that stabilize the injury in the first few minutes.
4	Management of common injuries in Physical Education	Strengthen skills to recognize, treat and stabilize common injuries such as sprains, bruises, dislocations, cramps and muscle trauma.
5	Preventive management and safety in the school environment	Promote prevention strategies through safe space organization, load control, risk identification, and application of school rules.
6	Protocols for action and institutional referral	Instruct the teacher in the proper use of institutional protocols and referral criteria to ensure timely and coordinated care.
7	Integrated workshop on simulations and case studies	Integrate knowledge and skills through practical simulations and analysis of real cases, consolidating the teacher's professional competence.

Assessment of relevance by expert judgment

An expert review was conducted, based on the criteria of Moncada et al. (2025), to confirm the relevance, clarity, and coherence of the components of the Professional Development System for Physical Education Teachers. Five specialists in Physical Education, sports first aid, and curriculum design participated in the review. Each expert evaluated the items on a scale of 1 to 4 (1 = very insufficient, 4 = very adequate) based on: internal coherence; content relevance; applicability; feasibility; and alignment with the training system's objectives.

The results show a high level of agreement among the experts, indicating that the evaluated items are highly suitable for implementation. Overall, the system received an average score of 3.68/4, corresponding to "high suitability" according to the established ranges (Tables 2 and 3).

Table 2. - Results of the expert judgment (n = 5)

Expert	Relevance	Clarity	Coherence	Applicability	Average per expert
Expert 1	4.0	3.5	3.5	4.0	3.75
Expert 2	3.5	3.5	3.0	3.5	3.38
Expert 3	4.0	4.0	3.5	4.0	3.88
Expert 4	3.5	3.0	3.0	3.5	3.25
Expert 5	4.0	3.5	3.5	4.0	3.75

Table 3. - Overall averages by criterion

Criterion	Average	Interpretation
Relevance	3.80	High
Clarity	3.50	High
Coherence	3.30	Medium-High

Results of the practical application

Table 4. - Results of the survey of Physical Education teachers (n=30)

No.	Evaluation indicators	MA	TO	PA	NA	Total
1	Level of knowledge about common types of school sports injuries	0	0	18	12	30
2	Level of preparedness to apply first aid measures to sports injuries	0	6	15	9	30
3	Mastery of the sequence of action in the event of an acute injury (RICE/POLICE protocol)	0	0	21	9	30
4	Knowledge of when to refer to medical personnel in case of injury	3	3	18	6	30
5	Ability to identify warning signs in sports injuries	0	0	21	9	30
6	Knowledge of preventive measures to avoid injuries during class	0	3	18	9	30

Table 4 shows that most of the physical education teachers evaluated in the pretest demonstrate an insufficient level of knowledge and skills for the immediate management of sports injuries in the school context. The "Partially Adequate" (PA) category predominates in most indicators, with a total absence of "Very Adequate" (MA) evaluations in items 1, 3, and 5, which correspond to knowledge of common types of

injuries, mastery of the action sequence (RICE/POLICE), and identification of warning signs, respectively (Table 4).

Furthermore, although some indicators, such as preparedness to administer first aid and knowledge of when to refer to medical personnel, reach acceptable levels in the “Adequate” (A) and “Very Adequate” (MA) categories, these percentages remain low, indicating that only a minority of teachers possess satisfactory competencies in these areas. Overall, the results highlight the urgent need to implement specific training strategies that strengthen first aid training, action protocols, and injury prevention, with an emphasis on applied practice and the early recognition of signs of severity.

DISCUSSION

The research results reveal a significant gap in the training provided to physical education teachers on how to manage sports injuries. Although most teachers recognize the importance of acting immediately after an injury during class, the findings indicate that their understanding of the concepts and skills in real-world situations is limited, which aligns with the findings of Sarabia *et al.* (2024).

This is consistent with studies conducted in Latin America; Chernes Delgado and Del Hierro (2024) indicate that teacher training in first aid and sports emergency management is not included as a systematic part of primary teacher training programs and professional development systems. The results suggest that professional development strategies that provide teachers with updated and applicable tools for their work context are important for their professional teaching practice.

Furthermore, the identification of the most common injuries, sprains, contusions and muscle strains, is consistent with international literature, which indicates that such injuries are linked to the intensity of school physical activity, lack of preparation and inadequate use of motor techniques.

However, the study adds that teachers are not provided with some guidelines for responding to situations requiring more intensive care. This is particularly crucial at a time when swift action is essential to prevent further deterioration and support a safe recovery. There is also a finding in this category of teachers' reported knowledge regarding first aid, where almost all teachers had a very low level of knowledge, possessing only basic or secondhand information (Marín *et al.*, 2022).

This finding contradicts the role of physical education teachers as first responders in the school setting. Recent research indicates that schools should provide regular refresher courses on first aid, but in reality, these courses are either scarce or do not meet the actual needs of teachers.

Therefore, the findings of González *et al.* (2024) and Asenjo *et al.* (2024) help confirm that the lack of formal training is a direct factor in the response to sports emergencies. Finally, the development of a professional development system is suggested as a desirable and essential alternative to improve educational competencies related to the field of immediate injury intervention. The findings presented justify its adoption, as they directly address the deficiencies identified during the study.

Modularity, practical application of scenarios (in practice) and performance-based evaluation, key principles (which many authors also mention as essential components for continuous professional learning), have been integrated into the model that was selected for this project.

So the discussion allows us to find that the designed system is relevant, but, more importantly, it should be an opportunity to improve the quality of teaching, ensure the safety of students within the school environment and build the role of the Physical Education teacher in the school environment.

CONCLUSIONS

Physical education teachers have significant deficiencies in their preparation for managing sports injuries, particularly regarding first aid procedures, rapid decision-making, and the application of basic initial care protocols. These gaps in training underscore the importance of improving their ongoing professional development from a scientific and up-to-date perspective.

A survey of 164 teachers revealed a significant discrepancy between their recognition of the most common sports injuries and their ability to intervene appropriately. Teachers explicitly stated that common injuries include sprains, bruises, and muscle strains, but their capacity to respond safely and effectively is insufficient, increasing the risk of complications in the school environment.

The integration of theoretical content, operational procedures, and practical activities aimed at improving pedagogical skills demonstrates the excellent relevance and feasibility of the proposed professional development system, according to experts. This modular architecture makes the training proposal a coherent, applicable, and adaptable plan for diverse educational settings.

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The authors declare no conflicts of interest.

Authors' contributions:

The author participated in the writing of the work and the analysis of the documents.



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