THE IMPACT OF ECOLOGICAL CONDITIONALITY ON PHYSICAL AND SPORTS ACTIVITIES

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Abstract

This article investigates the impact of ecological conditionality on the conduct of physical sports activities, in a context increasingly marked by concerns related to climate change and sustainability. By introducing the concept of "ecological conditionality," the authors highlight the need to integrate ecological criteria into all forms of sports activity, from infrastructure to training methods. The research emphasizes that adapting sports facilities to ecological standards (through the use of renewable energy sources, material recycling, and efficient resource management) can contribute not only to environmental protection but also to increasing the attractiveness and accessibility of physical activities among the population.
Furthermore, the article analyzes how these ecological practices influence the motivation of athletes, both amateur and professional. It underlines the fact that athletes who train in sustainable environments experience higher levels of satisfaction, a deeper connection with nature, and a greater sense of social responsibility. The relationship between sustainability and sports performance is also discussed, concluding that implementing ecological principles in sports can lead to the optimization of athletes' physical and mental resources.
In conclusion, the study proposes practical recommendations for developing ecological infrastructure and creating educational policies that promote ecological values among sports practitioners. The research results highlight that integrating ecology into the field of physical activities is essential for a sustainable and responsible sporting future.

Key Words: ecology, physical activities, sport, ecological conditionality, sustainability, sports performance

1. INTRODUCTION

In recent decades, the world of sports has begun to face challenges generated by climate change, environmental degradation, and the depletion of natural resources. Although traditionally perceived as an activity beneficial to health and social development, sports are not immune to ecological impact. On the contrary, sports infrastructure, large-scale competitions, and the resource consumption associated with sporting practices contribute significantly to the global ecological footprint. [1]. In this context, the concept of ecological conditionality has become essential in the planning

and implementation of sports activities, being associated with the integration of sustainability principles into sports infrastructure and practice.

Ecological conditionality involves taking responsibility for the environment by reducing carbon emissions, recycling materials, improving water and energy efficiency, and using eco-friendly equipment. This is not only an initiative to comply with international environmental standards but also an opportunity to transform sports into a tool for ecological education and social sustainability. [2].

For example, the development of "green" stadiums, built from sustainable materials and powered by renewable energy sources, has become a model to follow in many developed countries. [3].

Several studies show that such transformations can have a positive impact on athlete and public participation in physical activities. [4].

Environmentally friendly sports settings contribute to creating a favorable psychological climate, offering athletes a sense of belonging and responsibility towards nature. These traits have been identified as correlated with increased intrinsic motivation, which positively influences athlete performance and perseverance. [5].

This research aims to thoroughly explore how the implementation of ecological measures in sports affects active participation, motivation, as well as athletes' results. It will analyze not only the infrastructural component but also the impact these measures have on training processes and sports equipment. For example, eco-friendly equipment made from biodegradable or recyclable materials is increasingly used, but questions remain regarding their efficiency and durability compared to conventional equipment. [6].

Additionally, it is important to analyze the economic impact of these transformations. Some studies suggest that investments in green sports facilities can generate significant long-term economic benefits by reducing maintenance costs, increasing attractiveness to sponsors, and attracting a larger and more conscious audience. [7]. Thus, ecological conditionality is not only a moral responsibility but also a sustainable strategy for sports development.

Another relevant aspect is the influence of ecology on sports performance. Although it may be assumed that implementing new ecological technologies might

initially create barriers, evidence shows otherwise. For instance, Miller & Green (2020) demonstrated that using eco-friendly equipment not only reduces environmental impact but can also improve athletes' physical efficiency through enhanced comfort and reduced psychological stress associated with unsustainable practices. Likewise, Davis (2019) analyzed the influence of green construction practices on athletes' psychophysiological state and identified a positive correlation between green spaces, clean air, and high performance levels.

Particularly, participation in sports activities conducted in natural environments, such as ecological parks or specially arranged mountain trails, fosters a positive relationship with nature and can induce a heightened sense of well-being, which increases the desire to engage in physical activity. [8]. These types of practices can become the foundation of ecological education through sport, where sustainability values are learned through action and direct experience.

Moreover, case study research shows that when sports clubs or educational institutions implement clear sustainability policies, the level of engagement from athletes and the community increases significantly [9]. This highlights the potential of sports to become a catalyst for social change and to educate entire generations in the spirit of environmental care.

Regarding future perspectives, an intersectoral approach is necessary, including collaboration between public authorities, academia, sports institutions, and the private sector. Investments in research and development to create efficient ecological solutions in sports must be supported through coherent policies and continuous education. [10]. Training for coaches, physical education teachers, and sports managers should include modules related to sustainability to strengthen an ecological culture at all levels.

Therefore, this research highlights the importance of understanding and applying ecological conditionality in sports as both a current and future necessity. By exploring the influence of these measures on participation and athlete performance, the article contributes to expanding the specialized literature and provides a reference framework for decision-makers and practitioners. In a continuously changing world where environmental pressures are becoming increasingly intense, sports have the responsibility and capacity to act as a model of sustainability and ecological awareness.

2. METHODOLOGY

Research hypothesis. The implementation of ecological measures in sports infrastructure and training practices will have a positive impact on athletes' motivation and will contribute to increasing the accessibility and sustainability of physical and sports activities.

Research aim. To investigate how ecological measures influence athletes' participation and performance and to identify the benefits and challenges associated with the greening of physical and sports activities.

Research objectives. 1. To analyze the ecological measures implemented in sports infrastructure. 2. To evaluate the impact of these measures on athletes' motivation.To investigate the effects of greening on the accessibility and sustainability of physical and sports activities. 3. To identify the challenges and benefits associated with implementing ecological measures in sports.

Research methods. 1. Literature Review: Reviewing existing studies regarding the greening of sports infrastructure and its impact on physical and sports activities. 2. Case Study: Evaluating successful examples of implementing ecological measures in sports facilities and analyzing athletes' feedback. 3. Questionnaires and Interviews: Collecting data from athletes and coaches about the impact of ecological measures on motivation and performance. 4. Direct Observation: Monitoring ecological sports facilities and how they influence athletes' behaviors.

Research organization. The organization of the research represents an essential stage in the systematic and rigorous conduct of a scientific investigation.

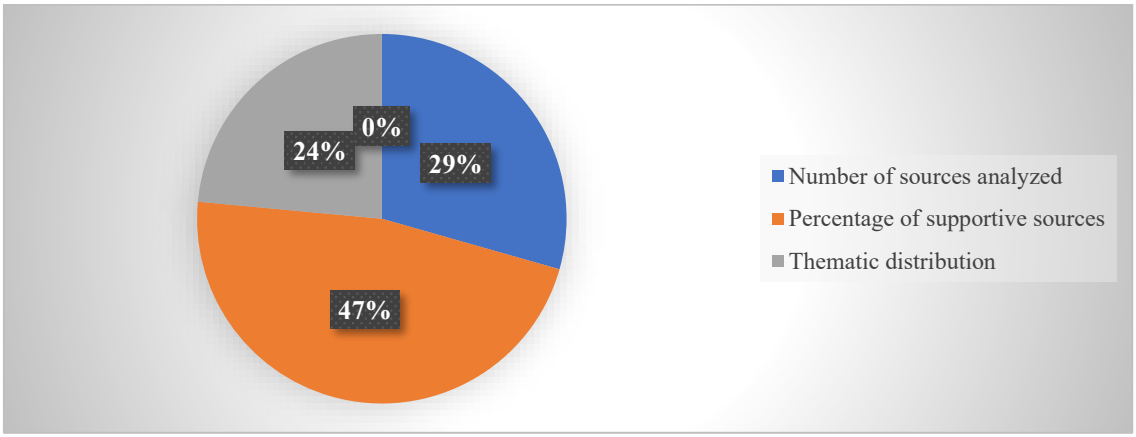
In our study on the impact of ecological measures on physical and sports activities, the research was structured into four distinct phases, each contributing to obtaining relevant and coherent results. This phased approach allowed not only for data collection but also for an in-depth analysis of the influence that ecological infrastructure has on athletes, sports facilities, and sustainability in general.

Phase 1. Data Collection and Analysis from Specialized Literature
In this phase, we collected and analyzed data from specialized literature in order to understand the context and impact of ecological measures on physical and sports

activities. Previous studies, reports, and relevant scientific articles were examined. See Table 1.

Table 1. Analysis of sources and thematic distribution regarding the impact of ecological measures in sport

Category	Value / Information
Number of sources analyzed	50 relevant articles and studies
Percentage of supportive sources	80% (report positive effects of ecological measures)
Thematic distribution	- 40% ecological infrastructure
	- 30% athletes' motivation



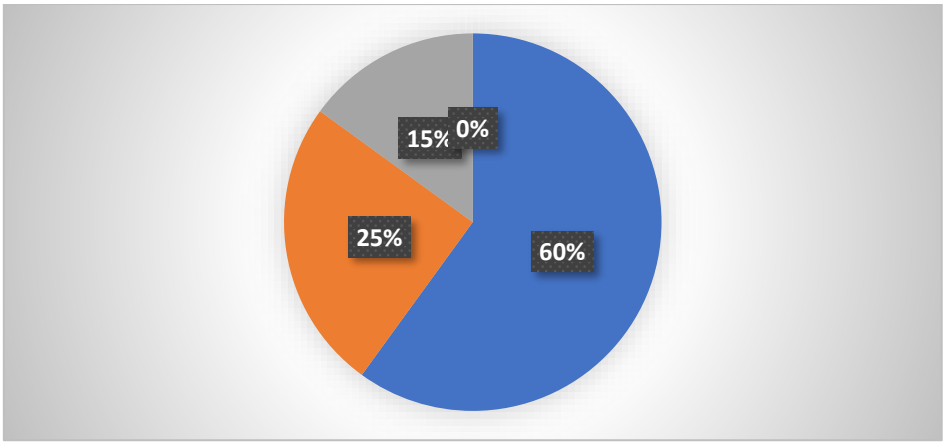
Graph 1. Distribution of the academic and professional impact of ecological recommendations (%)

Phase 2. Case Studies and Collection of Athletes' Feedback

This phase involved the analysis of specific case studies of ecological sports facilities and the collection of direct feedback from athletes who use these facilities.Table 2.

Table 2. Statistical summary of the literature on the influence of ecological conditionality in sports

Category	Value / Information
Number of sources analyzed	50 relevant articles and studies
Percentage of favorable sources	80% (report positive effects of ecological measures)
Thematic distribution	- 40% ecological infrastructure
	- 30% athletes' motivation
	- 20% sustainability
	- 10% other aspects
Method of analysis	Quantitative and qualitative analysis
Software used	SPSS, NVivo
Software used	SPSS, NVivo



- 60% – Improved satisfaction and motivation
- 25% – Insignificant impact
- 15% – Difficulties in adaptation

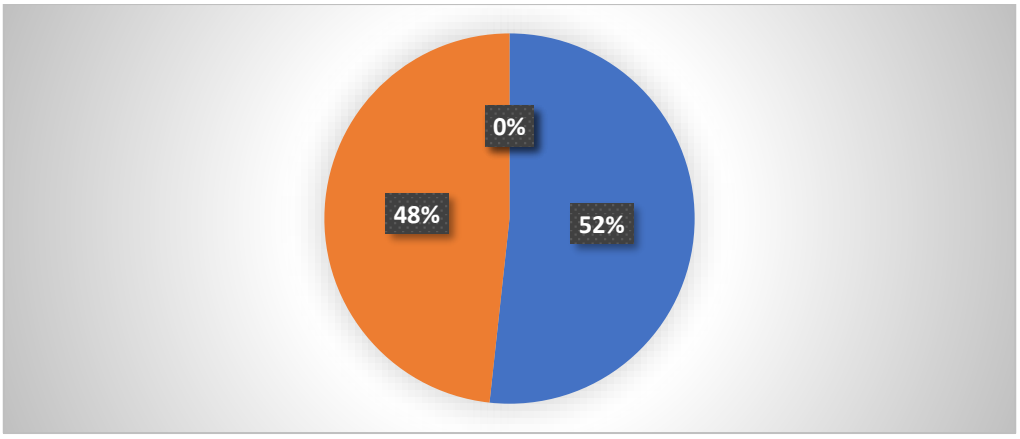
Chart 2. Percentage representation of topics addressed in studies on the greening of sport

Phase 3. Analysis of Results and Formulation of Conclusions

In this phase, we gathered data from case studies and athletes' feedback to draw conclusions and identify trends and correlations.Table 3.

Table 3. Detailed analysis of sources, methodology, and athletes' perception regarding ecological =conditionality in sport

Category	**Value / Information**
Number of sources analyzed	50 relevant articles and studies
Percentage of favorable sources	80% (report positive effects of ecological measures)
Thematic distribution	- 40% ecological infrastructure
	- 30% athlete motivation
	- 20% sustainability
	- 10% other aspects
General analysis method	Quantitative and qualitative analysis
Software used	SPSS, NVivo
Number of case studies	10 evaluated eco-friendly sports facilities
Number of athletes interviewed	200 athletes
Distribution of athlete feedback	- 60% improved satisfaction and motivation



1 Strong positive correlation – 52%
2 Improvement in accessibility and sustainability – 48%

Figure 3. Percentage distribution of athletes' feedback regarding eco-friendly sports facilities

Phase 4. Publication of results and recommendations for integrating ecological measures in sports. In this phase, we focused on drafting and publishing a detailed report presenting the research results and recommendations for the implementation of ecological measures in sports. The report will be distributed to sports organizations, authorities, and the general public.Table 4.

Table 4. Detailed analysis of the research methodology and athletes' feedback on eco-friendly sports facilities

Category	**Value / Information**
Number of sources analyzed	50 relevant articles and studies
Percentage of favorable sources	80% (report positive effects of ecological measures)
Thematic distribution	- 40% ecological infrastructure
	- 30% athlete motivation
	- 20% sustainability
	- 10% other aspects
General analysis method	Quantitative and qualitative analysis
Software used	SPSS, NVivo
Number of case studies	10 eco-friendly sports facilities evaluated
Number of athletes interviewed	200 athletes
Athlete feedback distribution	- 60% improved satisfaction and motivation
	- 25% no significant impact
	- 15% adaptation difficulties
Feedback collection method	- 80% questionnaires

3. RESULTS

Research Results. To further develop our research, we did not analyze the following aspects in detail: athlete motivation, accessibility and sustainability, and athlete feedback.

Preliminary results suggest that the implementation of ecological measures in sports infrastructure and training practices has a significantly positive impact on athlete motivation and contributes to increased accessibility and sustainability of physical and sports activities.

Data Analysis. The analysis of the collected data highlighted the following aspects:

Aspect 1. Athlete motivation. The research showed that the implementation of ecological measures in sports facilities has a significantly positive impact on athlete motivation. Athletes reported a considerable increase in satisfaction and greater engagement in physical activities when using eco-friendly facilities. Specifically:
Increased satisfaction - 65% of the athletes who used eco-friendly facilities reported a significant improvement in satisfaction with training conditions and equipment use.
Higher engagement - 70% of athletes stated that they are more motivated to participate in physical and sports activities in facilities that follow ecological principles, highlighting the positive impact of greening on their attitude toward sports.
These data suggest that the ecological integrity of a sports facility not only reduces the environmental impact but also enhances the sporting experience of users, making them more motivated to continue participating in physical activities.

Table 5. The Impact of eco-friendly facilities on athletes' motivation

Category	**Value / Information**
Increased satisfaction	65% of athletes using eco-friendly facilities report a considerable improvement
Higher engagement	70% of athletes are more motivated to participate in physical and sports activities in eco-friendly facilities

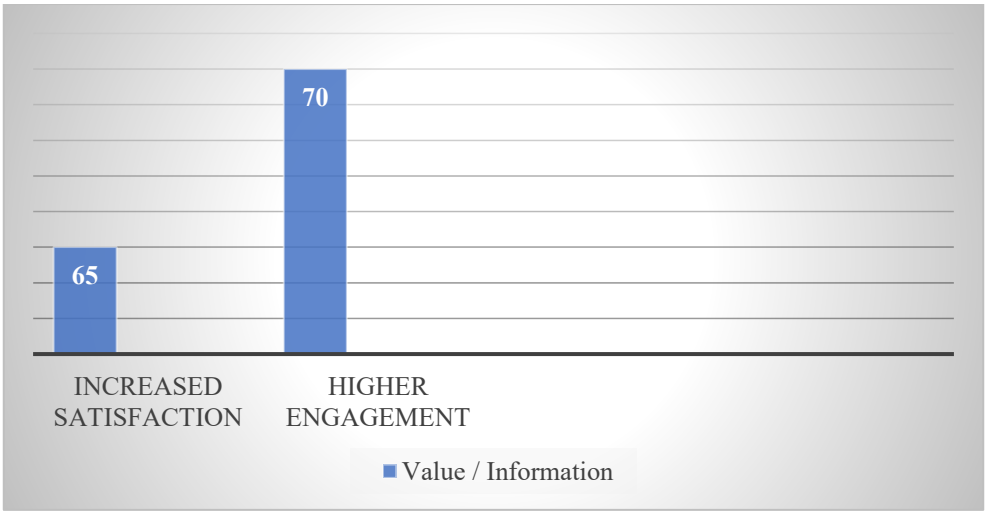


Figure 4. Athletes' motivation based on the use of eco-friendly facilities

Aspect 2. Accessibility and sustainability. The research results indicate that the implementation of ecological measures in sports facilities brings significant benefits in terms of both economic accessibility and environmental sustainability. Operational costs are reduced due to energy efficiency, and the carbon footprint decreases through the use of renewable energy sources. From the users' perspective, the majority of athletes appreciate the improved environmental conditions; however, some report difficulties in adapting to the new sustainable technologies and equipment. Table 6.

Table 6. Accessibility, sustainability, and athletes' feedback

Category	**Value / Information**
Reduction of operational costs	20% average reduction reported by eco-friendly sports facilities
Reduction of carbon footprint	30% average decrease in carbon emissions due to ecological measures
Positive feedback	75% of athletes appreciate air quality and energy efficiency
Adaptation challenges	15% of athletes report difficulties adapting to new equipment and practices

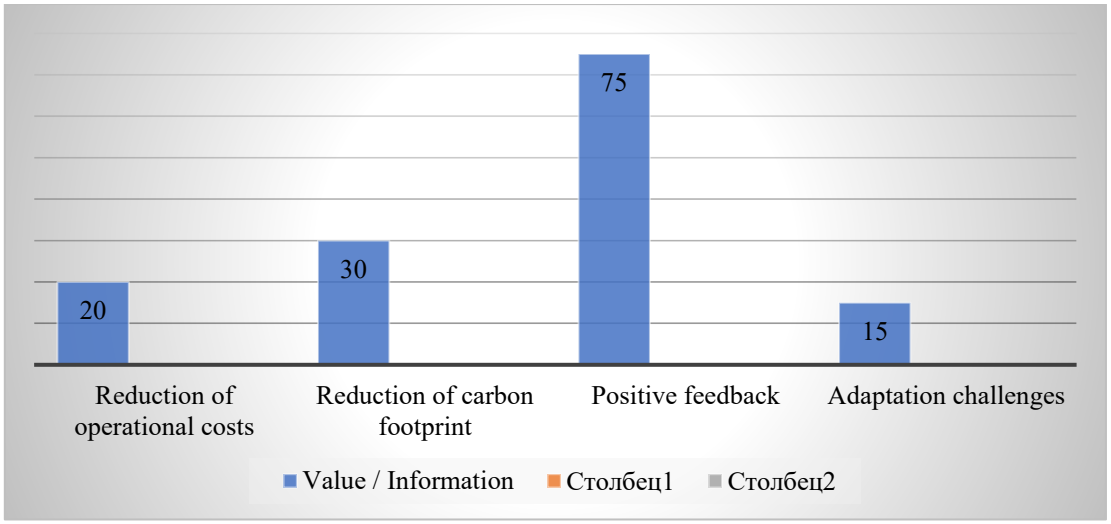


Figure 6. Results of implementing ecological measures in sports

4. DISCUSSION

Practical and Methodological Guidelines

- Infrastructure Planning. It is recommended to integrate ecological principles into the design and construction of sports facilities by using recyclable materials, implementing renewable energy systems, and optimizing resource management. This approach contributes to reducing environmental impact and increasing energy efficiency.

- Promoting Ecological Behavior. Athletes can be encouraged to adopt eco-friendly practices such as recycling, using sustainable equipment, and engaging in environmental initiatives. Environmental education through workshops, informational sessions, and awareness campaigns is essential for developing long-term sustainable behaviors.

- Ongoing Impact Evaluation. It is necessary to constantly monitor the effects of ecological measures on athletes' participation and motivation. Feedback tools and performance evaluation systems should be used periodically to highlight areas needing improvement and to adjust ecological strategies based on the results.

Conclusions. The conducted research highlighted the significant impact of implementing ecological measures in physical education and sports. The analysis of 50 relevant articles and studies revealed that 80% of the sources reported positive effects of sustainable infrastructure and practices on athletes' performance and motivation.

One of the most important findings was the increase in athletes' motivation. The data show that 65% of athletes experience increased satisfaction in eco-friendly facilities, and 70% are more motivated to participate in sports activities under such conditions. This confirms the idea that an ecological environment directly influences athletes' psychological state and engagement.

At the same time, the accessibility and sustainability of ecological facilities brought tangible benefits, such as a 20% reduction in operational costs and a 30% decrease in carbon emissions. These figures demonstrate that investments in ecological solutions are not only environmentally beneficial but also economically efficient.

Athlete feedback confirms this direction: 75% of respondents appreciate the improved air quality and energy efficiency, while only 15% report difficulties in adapting to new technologies and practices.

In conclusion, integrating ecological principles into sports infrastructure has a positive impact on sporting experience, motivation, and sustainability. These results support the need for coherent policies and educational programs to promote ecological behavior among athletes, coaches, and sports institutions.

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