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An Investigation into the Artificial Intelligence Awareness of Faculty Members in the Faculty of Sports Sciences

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Abstract

This study aims to examine the awareness levels of academicians working in the field of sports sciences regarding artificial intelligence (AI) technologies. Within the scope of the research, semi-structured interviews were conducted with 10 faculty members from the Faculty of Sports Sciences at Yozgat Bozok University, employing a phenomenological design, one of the qualitative research methods. The data obtained were analyzed using content analysis. Findings revealed that participants believed AI technologies offer significant opportunities in areas such as performance analysis, training planning, rehabilitation, injury prevention, and the digitalization of educational processes in sports sciences. Participants also highlighted the importance of ethical concerns, data privacy, and access to technology. As a result, it is recommended that awareness of AI be increased among academicians, interdisciplinary collaborations be encouraged, and educational curricula be restructured to enable the effective and ethical integration of AI into the field of sports sciences.

Keywords: Artificial intelligence, Academic perspectives, Qualitative

Introduction

Intelligence is a complex phenomenon that manifests itself in a wide variety of ways, ranging from the individual to society, and from time to discipline. Consequently, definitions of intelligence also vary (Tamul et al., 2020). The term artificial intelligence was first coined at the Dartmouth Conference chaired by John McCarthy in 1956. With the proposal made at this conference, artificial intelligence became the focus of scientific circles, and McCarthy became known as one of the pioneers in this field (Alpaydın, 2013). The concept of "artificial intelligence" may be intriguing to many people when first heard. The idea of mimicking certain aspects of intelligence through artificial means is quite fascinating. However, some individuals may not have sufficient knowledge about this field. Today, artificial intelligence has begun to be actively used in many sectors, and it is predicted that it may pave the way for fundamental changes in many areas in the future. At the same time, thanks to artificial intelligence, big data analytics and learning solutions, it has become a field with potential for understanding user behavior and integrating this design information into parts (Sharma, 2023)

Artificial intelligence can be broadly defined as a technology that aims to develop systems capable of exhibiting human-like behavior without the use of any biological organisms (Aydın and Değirmenci, 2018). This technology aims to endow computer systems with human-like cognitive functions. Thanks to artificial intelligence applications, machines can analyses large data sets, recognize complex patterns, and generate solutions to problems. Its fundamental goal is to increase human efficiency and improve quality of life. Edward Fredkin, who works at the Massachusetts Institute of Technology, has described the birth of artificial intelligence as a turning point as significant as the formation of the universe and the beginning of life (Copeland, 1998). At the core of artificial intelligence research lies the goal of creating systems with human cognitive abilities. In this context, an interdisciplinary bridge is being built between cognitive sciences and computer sciences (Gürer and Akçınar, 2022).

The rapid advancement of technology is enabling artificial intelligence to bring about a fundamental transformation in the field of education. Artificial intelligence is making significant contributions to the education system, and these contributions are advancing to a more advanced stage over time (Uzun, Tümtürk & Öztürk, 2021). The foundations of artificial intelligence applications in education date back approximately 40 years. However, as the education sector is an area where margin for error is difficult to tolerate, this process is progressing more cautiously compared to other sectors (Uzun, Tümtürk & Öztürk, 2021).

While artificial intelligence technologies are creating a new paradigm in education, recent developments also hold similar potential for transformation in the field of sports science. Artificial intelligence offers innovative approaches in many areas, from performance analysis to training planning for athletes, from predicting injury risks to strategic decision-making processes (Çakır et al., 2023). This technology advances not only academic learning processes but also the individual performance of athletes. Numerous applications, such as preparing personalized training programmers, minimizing injury risks, and supporting decision-making processes during games, increase athletes' efficiency on both a physical and mental level. Athlete profiles, created by combining various data sources, from biomechanical analyses to physiological data and performance indicators, enable the creation of training regimes tailored to individual needs. Furthermore, artificial intelligence-supported match analyses identify teams' weaknesses, enabling strategic development. At the same time, monitoring athletes' psychological states supports mental performance (Çakır et al., 2023).

In this context, an example is the artificial intelligence-based injury prediction model developed by Dr Ahmet Bayrak from Selçuk University. This model can predict the risk of

future injuries by evaluating athletes' physical performance data and past injury information. Thus, clubs can both prevent injuries and save on treatment costs by preparing special preventive exercise programmers for their athletes (Ergene, Bayrak & Ceylan, 2020).

On the other hand, understanding and effectively using artificial intelligence has become extremely important for faculty members working in Sports Science Faculties under current conditions. Artificial intelligence training courses organised in these faculties will enable academics to closely follow developments in this field; it will also provide guidance on how to integrate artificial intelligence into their professional practices. This technology offers significant opportunities in areas such as evaluating athlete performance, creating personalized training plans, and preventing injuries through techniques such as big data and machine learning (Davenport and Patil, 2012).

There are various studies in the literature related to the digital world and sports (Cihan, and Araç Ilgar, 2019; Yaraş, and Efe, 2025). The aim of this research is to assess the level of awareness among academics in the field of sports science regarding artificial intelligence technologies, which are currently creating transformative effects in different disciplines, and to evaluate the potential for integrating these technologies into sports science education and research processes. In this regard, the knowledge levels, attitudes, and expectations of teaching staff working in Sports Science Faculties regarding artificial intelligence will be analyzed to identify existing gaps and areas of need. Based on the data obtained, strategic orientations and policy recommendations regarding the integration of artificial intelligence into sports science will be developed. These recommendations are expected to guide the artificial intelligence-focused restructuring of sports science curricula and the development of artificial intelligence-supported academic projects.

Material and Method

Ethics Committee Permission

Ethics committee approval for the conduct of this study was obtained from Yozgat Bozok University (Date: 07.07.2025, Number: E-50514558-770-328898)

Research Model

This study was conducted within the framework of the phenomenological design, one of the qualitative research methods. Phenomenology is an approach that aims to reveal individuals' perceptions of the phenomena they directly experience and the meanings they attach to these experiences (Creswell, 2013). This design is used specifically to understand how a particular experience is perceived, felt, and expressed by individuals. In the phenomenological approach, it is essential to examine in depth experiences that are frequently encountered in daily life but have not been sufficiently thought about or fully understood (Yıldırım & Şimşek, 2013). In this context, the subjective worlds of meaning regarding a particular phenomenon are analyzed based on the participants' experiences. The fundamental aim of this process is to reveal how participants experience the phenomenon in question through their own narratives (Patton, 2014). A phenomenological pattern, according to another definition, is a pattern that reveals the common meaning of the lived experiences of several people regarding a phenomenon or a particular concept. The aim of this pattern is to understand the essence of the experiences of people who have deeply experienced a particular phenomenon (Creswell, 2018).

Working Group

The working group for the study consisted of a total of 10 participants, including 5 female and 5 male faculty members working at the Faculty of Sports Sciences at Yozgat Bozok University. The homogeneous sampling technique, one of the purposive sampling methods, was used to determine the working group. Accordingly, all participants were selected from academics working in the same faculty. All participants were asked for their personal information.

Participants were provided with detailed information about the purpose, process, and scope of the research; the study was conducted on a voluntary basis. Participants were informed that the data obtained would be used solely for scientific purposes. In order to minimize data loss during the interview process, the interviews were recorded using a voice recorder with the participants' consent. The duration of the interviews varied between 12 and 15 minutes, depending on the participant.

Data Collection Tool

In this study, the semi-structured interview technique was chosen as the data collection method. The main purpose of using this technique is to be able to ask guiding and probing follow-up questions based on the participants' responses, thereby enabling a more comprehensive examination of the subject. The interviews were conducted individually with faculty members working at the Faculty of Sports Sciences at Yozgat Bozok University, and a total of 10 interviews were conducted. All interviews were conducted between 25 October 2025 and 30 October 2025 in the Meeting Room of the Faculty of Sports Sciences; each interview session lasted approximately 12 to 15 minutes.

In preparing the interview form, a literature review was first conducted; questions were formulated based on the information found in the literature. The prepared questions were submitted to field experts for their opinion to ensure content validity; necessary adjustments were made based on the feedback received from the experts, and the final version of the interview form was prepared. The following questions were posed to participants during the meeting. What are your thoughts on the use of artificial intelligence technologies in the field of sports science? Please explain your views on this subject in detail. In your opinion, in which areas of sports science are artificial intelligence technologies used or have the potential to be used? (e.g. training planning, athlete performance analysis, rehabilitation, etc.) How do you think the development of artificial intelligence technologies will affect your work in the field of sports science? What resources do you use to learn about artificial intelligence technologies? (e.g. scientific articles, conferences, online courses, etc.)

Data Analysis

In this study, the semi-structured form responses were examined using inductive analysis. This for in-depth examination of the dimensions that emerge from patterns within the context of the examined scenario (Patton, 2014). Data from qualitative research is analyzed in four stages. The first stage is data coding, the second stage is theme discovery, the third stage is code and theme arrangement, and the fourth stage is identification and in terpretation of the findings (Yıldırım & Şimşek 2013). The study was consulted with experts in qualitative research, and adjustments were made accordingly. For external validity, purposive sampling and detailed description were used, and for internal reliability (consistency), the research data were analyzed by different experts in qualitative research. Encoder reliability Miles and Huberman (Miles & Huberman) calculated as .92 using the formula (Consensus / Consensus + Disagreement X 100). After reviewing the interview recordings, the researcher coded the data and categorized them.

Findings

Responses to the question, "What are your thoughts on the use of artificial intelligence technologies in the field of sports science?" are presented below.

1P: *"Thanks to artificial intelligence, athletes' physiological data, movement analyses and past performances are examined in detail to create personalized training programmers. These programmers can include specific exercises targeting factors such as muscle development, endurance, speed and coordination, taking into account the athlete's strengths and weaknesses. This helps athletes maximize their genetic potential and reduces the risk of injury."*

2P: *"Artificial intelligence algorithms can predict individual injury risk with a high degree of accuracy by analyzing a range of factors, including athletes' biomechanical data, training loads, injury history, and even weather conditions. This enables coaches and athletes to identify potential injury risks in advance, adjust training programmers accordingly, and take preventive measures. For example, an algorithm can detect excessive stress on a footballer's knee joint and recommend knee strengthening exercises in advance."*

3P: *"Artificial intelligence can predict not only general injury risk but also injury types specific to certain sports. For instance, special algorithms can be developed for common issues such as ankle sprains in basketball or elbow injuries in tennis players. This ensures that athletes are better protected against the types of injuries they most commonly encounter."*

4P: *"In team sports, artificial intelligence algorithms enable a better understanding of interactions within the game and the overall flow of the team's play by analyzing players' movements, passes, shots, and decision-making processes in detail. This enables answers to questions such as which players have better synergy, where weaknesses lie in certain positions, and which game tactics are more effective. Based on this information, coaches can prepare more effective game plans and optimize players' performance."*

5P: *"We must never compromise on ethical principles when using artificial intelligence. It is particularly important to pay attention to issues such as data privacy and algorithmic bias."*

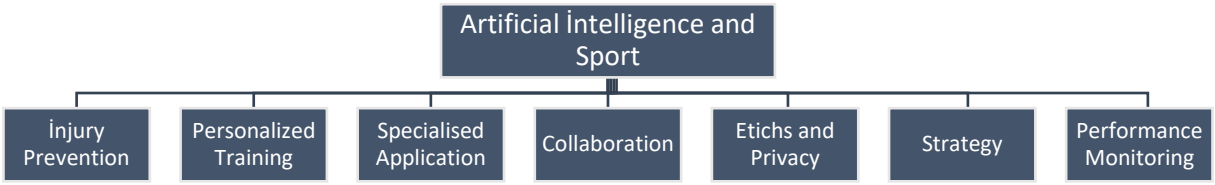
6P: *"While artificial intelligence is revolutionizing sports science, the experience, intuition and interpersonal skills possessed by coaches and athletes are still of great importance. While artificial intelligence supports decision-making processes by providing objective data, coaches can produce more effective solutions by interpreting this data, considering the psychological state of athletes, and establishing personal relationships. The ideal scenario is a system where artificial intelligence is used as a tool and the coach acts as a guide and source of motivation."*

7P: *"Artificial intelligence represents the beginning of a new era in sports science. Thanks to artificial intelligence combined with wearable technologies, athletes' performance will be monitored in real time."*

8P: *"Artificial intelligence is not the answer to every problem. Human intelligence is still necessary, especially for complex and unpredictable situations."*

9P: *"The cost of accessing and using artificial intelligence technologies may be a barrier for small sports clubs and individual athletes."*

10P: *"Artificial intelligence requires the convergence of different disciplines such as computer science, statistics and engineering, along with sports science."*



The responses to the question "In your opinion, in which areas of sports science are artificial intelligence technologies used or have the potential to be used? (For example; training planning, athlete performance analysis, rehabilitation, etc.)" are presented below.

1P: *"Artificial intelligence can analyses athletes' physiological data, training history and genetic makeup to create personalized training programmers for each individual. This helps athletes maximize their potential and reduce the risk of injury."*

2P: *"AI-powered video analysis tools can examine athletes' movements in detail to identify technical errors and provide feedback to improve their performance. Furthermore, big data analytics enable the tracking of trends and developments in athletes' performance."*

3P*: "Artificial intelligence can predict the risk of injury by analyzing athletes' biomechanical data, enabling preventive measures to be taken. In the event of injury, AI-supported rehabilitation programmers enable athletes to recover more quickly."*

4P: *"Artificial intelligence can be used to determine athletes' nutritional needs and create personalized nutrition plans. It can also make recommendations about the nutrients that need to be supplemented and the amounts."*

5P: *"Artificial intelligence-powered Chabot's can monitor athletes' psychological states and help them cope with problems such as stress and anxiety. It can also provide personalized feedback to boost their motivation."*

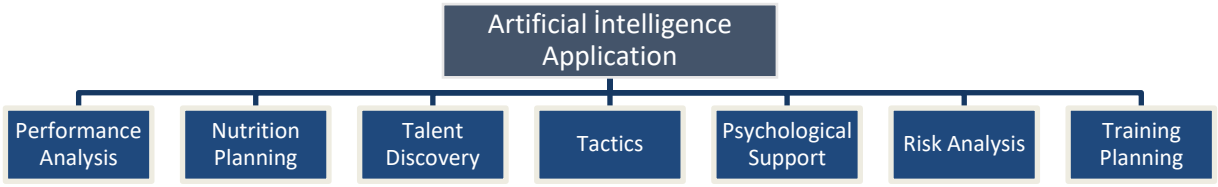
6P: *"Artificial intelligence can contribute to the development of team tactics by analyzing players' movements in team games. It can help develop more effective strategies by analyzing the playing styles of opposing teams."*

7P: *"Artificial intelligence-supported monitoring systems can track athletes' performance in training and matches in real time and provide immediate feedback to coaches."*

8P: *"Artificial intelligence can help discover promising athletes by objectively evaluating the skills of young athletes."*

9P: *"Artificial intelligence can be used to optimize the performance of sports equipment and develop equipment that is more suited to athletes' needs."*

10P: *"Artificial intelligence requires the convergence of different disciplines such as computer science, statistics and engineering, along with sports science."*



The responses provided by participants to the question, "How will the development of artificial intelligence technologies affect your work in the field of sports science?" are presented below.

1P: *"Thanks to artificial intelligence, we will be able to analyses much larger and more complex data sets. This will enable us to understand athletes' performance in greater detail and create personalized training programmers."*

2P: *"Artificial intelligence will speed up our research processes by automating time-consuming processes such as literature reviews, data collection and analysis. This will enable us to access more information in less time."*

3P: *"Thanks to artificial intelligence, we will begin to ask new questions that we could not have thought of before. For example, we will conduct more in-depth studies on topics such as the relationship between athletes' brain activity and their performance."*

4P: *"Thanks to AI-supported simulations, we will be able to predict the results of different training methods and tactics in advance. This will enable us to make more effective decisions."*

5P: *"Artificial intelligence will help us better understand the risk of injury and develop preventive measures by analyzing athletes' movements in greater detail."*

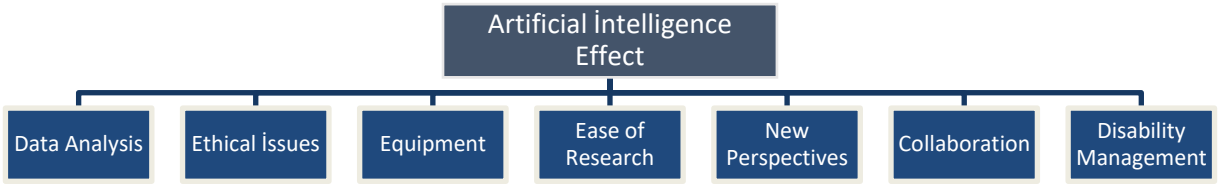
6P: *"Thanks to artificial intelligence, the performance of sports equipment will be optimized and equipment more suited to athletes' needs will be developed."*

7P: *"With the proliferation of artificial intelligence in the world of sport, ethical issues will also arise. New regulations will be required on issues such as data privacy and athletes' rights."*

8P: *"New collaborations will form between artificial intelligence experts, computer scientists and sports scientists. This will accelerate interdisciplinary work."*

9P: *"Artificial intelligence will enable the use of new methods in sports science education. Students will have a more interactive learning experience thanks to AI-supported simulations and virtual reality environments."*

10P: *"Artificial intelligence will revolutionize many areas of the sports industry. AI-supported solutions will be used in areas such as ticket sales, marketing activities and organizational processes."*



The responses provided by academics to the question "What resources do you use to learn about artificial intelligence technologies? (e.g., scientific articles, conferences, online courses, etc.)" are presented below.

1P: *"Prestigious scientific journals such as Nature, Science, IEEE Transactions on Neural Networks and Learning Systems, and Journal of Machine Learning Research. I use scientific journals and articles related to sports science, such as Sports Technology and the Journal of Sports Sciences."*

2P: *"Conferences such as NeurIPS, ICML, and ICLR are ideal for keeping up with the latest developments in the field. Conferences such as SIGKDD and ACM CHI feature work on artificial intelligence applications related to sports science."*

3P: *"Platforms such as Coursera, edX, and Udemy offer numerous free and paid courses on artificial intelligence, machine learning, and deep learning. Google AI Education and fast.ai are platforms that facilitate learning about artificial intelligence with practical applications and code examples."*

4P: *"University research laboratories, especially those in artificial intelligence and computer science departments, are a good source for learning about current research and projects. Articles and reports published by private sector research laboratories, such as Google AI and OpenAI, should also be followed."*

5P: *"Reddit (r/machinelearning, r/data science), Stack Overflow, and similar platforms allow you to ask questions about artificial intelligence, interact with other researchers, and keep up with the latest developments."*

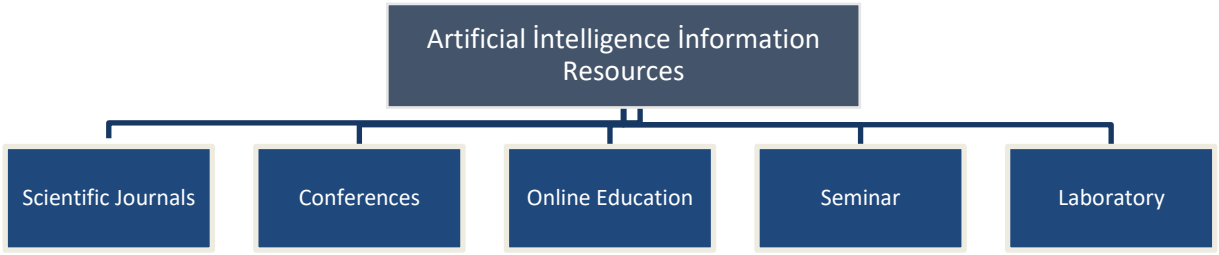
6P: *"Kaggle. On this platform, you can develop artificial intelligence projects on real-world data sets and examine the work of other researchers."*

7P: *"Google Scholar, Semantic Scholar, Scopus. These databases allow us to conduct comprehensive searches in scientific literature."*

8P: *"Gartner, Forrester: Reports published by research companies such as these provide important information about the future of artificial intelligence technologies."*

9P: *"TechCrunch, The Verge, Towards Data Science: Websites such as these can be useful for keeping up with the latest developments in the field of artificial intelligence."*

10P: *"By regularly following seminars and webinars organized by universities, research institutions, and companies, I can closely monitor developments in artificial intelligence technologies and effectively use these technologies in my research."*



Discussion and Conclusion

The research group consisted of a total of 10 individuals, including 5 male and 5 female faculty members from Yozgat Bozok University. The homogeneous sampling method, one of the purposive sampling methods, was used to determine the research group. It was stated that the data obtained would be used solely for scientific purposes. In order to minimize data loss during the interviews, they were recorded using audio recording devices. As a result of the interviews conducted with ten participants, it was observed that the participants presented positive views on the use and future of artificial intelligence technologies in the field of sports science in this study.

The study examined the views of academics on the use and future of artificial intelligence technologies in the field of sports science. Participants agreed that artificial intelligence has great potential in sports science. This finding parallels the work of Bunker and Thabtah (2019), who also suggested that artificial intelligence could revolutionize sports performance analysis. Participants stated that artificial intelligence creates personalized learning environments in sports education and supports a student-centred approach. This situation has also been emphasized by Luckin and colleagues (2016); according to them, artificial intelligence increases learning efficiency by adapting to individual differences in education. Indeed, Kılınç and Güngör (2021) also stated that artificial intelligence-based learning systems offer educational environments suitable for individual differences.

Artificial intelligence enables the development of personalized training programmers by allowing detailed analysis of athletes' physiological data, movement analyses, and past performance. This finding is similar to the work of McCullagh and Jenkins (2020) on data-driven performance management in sports science. At the same time, the accuracy of artificial intelligence algorithms in predicting injury risks, as expressed by the participants, has also been emphasized. In this context, Gabbett (2016) states that artificial intelligence-based load monitoring systems in sports play an important role in preventing injuries. A study by Gültekin (2022) also supports this view with scientific data, finding that ‘the risk of anterior cruciate ligament injury in athletes can be predicted with 85% accuracy using machine learning models.’ Furthermore, a study by Li and Wang (2023) concluded that ‘artificial intelligence algorithms offer superior potential compared to traditional methods in creating optimized training regimes tailored to individual needs by analyzing athlete performance data.’ In contrast, some researchers have expressed concerns that AI-supported training programmers may not always be fully adaptable to individual differences or may create inequalities in access to technology (Brown & Miller, 2020).

Furthermore, the contributions of artificial intelligence to sports science education are also noteworthy. Participants noted that artificial intelligence helps adopt a student-centered approach and ensures that educational content is delivered in a more appropriate manner according to students' learning speeds. This finding is supported by the findings of Ertürk and

Özerbaş (2020) in their study with university students, which showed that AI-supported content increases learning motivation. The potential of AI in education is also demonstrated by its ability to accelerate research processes by automating time-consuming processes such as literature review and data analysis. In this regard, Holmes and colleagues (2019) emphasize that the use of artificial intelligence in academic circles can improve research quality. Similarly, participants stated that increasing artificial intelligence literacy would enable the effective use of artificial intelligence in both academic work and teaching processes. This view aligns with the finding by Chen and Lee (2024), who highlight the positive effects of artificial intelligence on academic productivity: 'Artificial intelligence tools alleviate the burden of literature review and data processing for researchers, enabling them to focus on more complex analyses.'

This research highlights not only the potential of artificial intelligence in the field of sports science but also the ethical issues it brings with it. Participants emphasized the need to pay particular attention to data privacy and algorithmic biases. This is one of the issues highlighted in the work of Floridi and Colleagues (2018) on artificial intelligence ethics. With the proliferation of artificial intelligence in the world of sport, it is anticipated that interdisciplinary collaborations will increase and new areas of research will emerge. However, for these developments to occur in a healthy manner, it is crucial that the ethical and legal framework is established in advance. Karasu (2020) emphasizes the sensitivity of this issue, stating that 'data privacy in artificial intelligence applications creates serious ethical dilemmas, especially in the field of sports where biometric data is used.' Some researchers point out that bias issues in artificial intelligence stem from a lack of representation in data sets and that this situation may hinder the fair and equitable use of artificial intelligence (Crawford, 2021).

In conclusion, this research demonstrates that artificial intelligence technologies have considerable potential in the field of sports science. Participants emphasized that artificial intelligence can be effectively utilized in areas such as personalized training, performance analysis, injury prevention and rehabilitation. Furthermore, it appears that artificial intelligence has laid the groundwork for determining strategies for restructuring sports science education curricula and developing AI-supported research projects. These findings are consistent with some other studies conducted in the field of sports science (Miah, 2017; Güven and Aykaç, 2022). In the future, greater integration of artificial intelligence could bring about lasting changes in the field of sports science. In this context, the adoption of the opportunities offered by artificial intelligence by institutions providing sports science education and the monitoring of developments in this field by researchers will play a critical role in creating a healthy and sustainable sports ecosystem.

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