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INTEGRATION OF ARTIFICIAL INTELLIGENCE INTO THE RESEARCH PROCESS OF SPORTS MANAGEMENT: POTENTIALS AND CHALLENGES

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ABSTRACT

Artificial intelligence (AI) is becoming an increasingly important tool in scientific research, including in the field of sports management. This paper provides an overview of how AI can be applied in all phases of scientific research – from defining problems and goals, through literature review and hypothesis formulation, to research design and sampling, data collection, analysis, hypothesis testing, interpretation of results, and dissemination of findings. Special attention is paid to examples of the application of AI in various areas of sports management, such as strategic management and organizational culture, sports marketing, finance and economics of sports, human resource management and leadership, sports law and policy, ethics and integrity in sports, management of sports events and facilities, technology and innovation in sports, sports analytics, sustainable development in sports, and international sports management. Through a descriptive analysis of relevant literature and case studies, the paper highlights how AI contributes to the efficiency of the research process (e.g., faster data processing, pattern detection, and insight generation) in sports management, while also discussing challenges such as validity, algorithm bias, and ethical dilemmas. The results suggest that integrating AI can enhance the quality and impact of scientific research in

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sports management, provided that a critical approach is maintained and scientific integrity is maintained. The paper concludes that the ability of researchers to utilise AI tools, while understanding their limitations effectively, will be crucial for the future development of sports management science.

Keywords: artificial intelligence, scientific research, sports management, research methodology, digital transformation of scientific research

INTEGRACIJA VEŠTAČKE INTELIGENCIJE U ISTRAŽIVAČKI PROCES SPORTSKOG MENADŽMENTA: POTENCIJALI I IZAZOVI

APSTRAKT

Veštačka inteligencija (AI) sve više zauzima mesto u naučnim istraživanjima, uključujući i oblast menadžmenta u sportu. Ovaj rad prikazuje mogućnosti primene AI u različitim fazama naučnog istraživanja – od definisanja problema i postavljanja ciljeva, preko pregleda literature, formulisanja hipoteza i dizajniranja istraživanja, do prikupljanja i analize podataka, testiranja hipoteza, tumačenja rezultata i predstavljanja nalaza. Posebna pažnja posvećena je primerima primene AI u različitim oblastima menadžmenta u sportu, kao što su strateški menadžment i organizaciona kultura, sportski marketing, finansije i ekonomija sporta, upravljanje ljudskim resursima i liderstvo, sportsko pravo i politika, etika i integritet u sportu, upravljanje sportskim događajima i objektima, tehnologija i inovacije u sportu, sportska analitika, održivi razvoj u sportu, te međunarodni sportski menadžment. Kroz deskriptivnu analizu relevantne literature i studija slučaja, rad ističe kako AI doprinosi efikasnosti istraživačkog procesa (na primer, bržoj obradi podataka, otkrivanju obrazaca i generisanju uvida) u sportskom menadžmentu, ali i razmatra izazove poput validnosti, pristrasnosti algoritama i etičkih dilema. Rezultati ukazuju da integracija AI može unaprediti kvalitet i domet naučnih istraživanja u sportskom menadžmentu, uz uslov kritičkog pristupa i očuvanja naučnog integriteta. Rad zaključuje da će sposobnost istraživača da efektivno koriste AI alate, uz razumevanje njihovih ograničenja, biti ključna za budući razvoj nauke o menadžmentu u sportu.

Ključne reči: veštačka inteligencija, naučno istraživanje, sportski menadžment, istraživačka metodologija, digitalna transformacija naučnog istraživanja

Introduction

Scientific research is a systematic, planned, and objective process of examining a defined problem, conducted in accordance with established methodological principles, with the aim of generating reliable and precise new knowledge about the phenomenon under observation (Simić, 2002). The research process

consists of a sequence of logically connected phases. In traditional accounts of the research process (Kothari, 2004), these phases include: (1) formulating the research problem and objectives, (2) reviewing relevant literature and developing the theoretical framework, (3) constructing one or more working hypotheses, (4) preparing the research design, (5) determining the sample (i.e., selecting the units or cases to be studied), (6) collecting data, (7) conducting the research according to the established plan, (8) processing and analysing the collected data, (9) testing the proposed hypotheses based on the analytical results, (10) generalising and interpreting the findings within a broader theoretical or practical context, and (11) reporting the research results and disseminating them (Kothari, 2004). Each phase plays an essential role in ensuring the validity and reliability of the overall research endeavour.

Sports management is a multidisciplinary, scientific, and practical field that applies management principles to sports and physical activity. In contemporary literature, management is often associated with the management of an organisation; therefore, sports management can be defined as the process of planning, organising, leading, and controlling resources in sports organisations and the sports sector to achieve set goals (Maksimović & Raič, 2023). As an academic discipline, sports management emerged at the end of the 20th century, following the professionalisation of sports and the adoption of business principles in the sports industry. Today, sports management encompasses a wide range of subdisciplines and functional areas that are applied in a sports context (Pedersen & Thibault, 2019). Key areas of sports management include: (1) strategic management and organizational culture in sport (strategic planning, management of sports organizations and their culture), (2) marketing in sport (promotion of sporting events, sponsorships, sports fan and consumer relationship management), (3) financial management and economics of sport (financial management of sports organizations, economic aspects of sports competitions and sports markets), (4) human resource management and leadership in sport (management of sports teams and organizations, development of sports personnel and talent), (5) law, policy and governance in sport (sports law, policies and regulations, management of sports federations and institutions), (6) ethics and integrity in sport (ethical issues, fair play, anti-doping and match-fixing), (7) management of sports events and facilities (planning and organization of sports competitions, management of stadiums, halls and infrastructure), (8) technology and innovation in sport (application of new technologies, data analytics, digital transformation of sport), (9) sports performance analysis, i.e. sports analytics (collection and analysis of data on sports performance and athletes' performance for decision-making), (10) sustainable development and social aspect of sport (sustainability of sporting events, impact of sport on society and the environment) and (11) international management and globalization in

sports (management in international sports organizations, global trends in the sports business). Each of these areas has its own specifics, but a common need unites them in the need for a scientific approach and research to inform decisions and improve practice in sport.

Recently, the development of artificial intelligence has revolutionised the way research is conducted in many fields, including sports management. AI refers to the ability of computer systems to mimic human cognitive functions such as learning, reasoning, and problem-solving, often through machine learning, natural language processing, computer vision, and other advanced algorithms. In the context of sports, AI has already proven helpful in enhancing sports performance, game analysis, personalised training, result prediction, and improving the fan experience (Hammes et al., 2022; Rahmani et al., 2024). Due to these possibilities, it is logical to consider how AI can assist researchers at all stages of scientific studies in the field of sports management. This paper aims to analyse the ways of applying AI at each stage of scientific research, citing concrete (real or hypothetical) examples from the mentioned areas of sports management. In this way, we aim to demonstrate how AI integration can enhance the efficiency, innovation, and reliability of research in sports management, while also highlighting the potential challenges and limitations that should be considered when utilising these technologies.

Method

This paper has a descriptive-analytical character and is based on a qualitative analysis of relevant literature (scientific papers in journals, monographs and reports) dealing with the application of artificial intelligence in the research process and in sports management. The narrative literature review method was employed (Westerbeek, 2025), which involves integrating findings from various sources to provide a comprehensive insight into the topic. We searched sources in several languages (Serbian, Croatian/Bosnian, English, German and Russian) over the last ~5 years, with a focus on papers published from 2020 onwards, given the rapid progress of AI in recent times. Search keywords included terms such as artificial intelligence, scientific research, sports, sports management, sports analytics, and AI in sports research. Examples of AI applications have been identified, covering each stage of the research process. For each phase, how AI tools and techniques can facilitate or improve that phase are analysed, and then linked to specific domains of sports management through illustrative examples. Particular attention is paid to the validity of the selected sources. Only papers in which the claims are supported by precise results or theoretical grounds (e.g. peer-reviewed scientific articles, reviews, case studies and official reports) are included. The data and findings from these sources were synthesised and presented within the structure of the results, divided by research phases. This method allows for an integrated view of the role of AI throughout the entire research process in sports management.

It is important to note that this is a theoretical analysis. The paper does not contain the author's primary empirical research, but relies on secondary sources. However, hypothetical examples are also included to illustrate the potential of AI in situations where adequate empirical data are not yet available, where such examples are clearly indicated and based on a logical extrapolation of existing knowledge. Finally, the results are critically discussed in the Discussion section, where the benefits and risks of using AI in scientific research are compared, as well as the implications for future researchers and practitioners in sports management.

Results

Application of AI in the formulation of research problems and objectives

The first phase of any research, the formulation of the problem and the definition of goals, lays the foundations of the entire project. Traditionally, researchers at this stage identify gaps in the literature or practical problems that require a solution (Milošević & Milojević, 2000). Artificial intelligence can significantly help in generating and refining research ideas. Modern AI data and text analysis tools can search through vast databases of information and identify patterns or trends that a human researcher might not easily spot. For example, machine learning algorithms can analyse thousands of published scientific papers and practice reports to identify the most commonly studied topics and under-explored areas within sports management (Rahmani et al., 2024). Thus, "knowledge gaps" can be observed, representing potential research problems. In the field of strategic management in sport, AI could, for example, analyse publicly available strategic plans and performance of sports organisations globally, and identify success factors that are common to the most successful clubs. Based on these insights, the researcher can then formulate the problem (e.g., exploring how certain factors of the strategy affect the performance of sports organisations) and the study's goals.

In practice, we can already see examples of AI being used to generate research ideas. For example, IBM Watson and similar systems can answer complex questions by searching the literature, thereby inspiring the formulation of a new problem. Generative models (such as large language models) can also be used for brainstorming. The researcher can "ask" the model what the current challenges in the sports industry are, and the model proposes several potential research directions based on the knowledge learned. Of course, these suggestions must be taken critically. AI can offer interesting ideas, but the researcher assesses their relevance and feasibility. It is important that AI does not replace human creativity, but complements it: for example, in the field of sports marketing, AI analysis of fans' social media can reveal an unexpected

problem, say a decline in engagement of a particular fan demographic, which would lead the researcher to define a research problem related to that phenomenon.

By using AI at this stage, researchers in sports management can examine the "bigger picture" of existing knowledge more quickly and comprehensively, which helps to define the problem and goals more clearly and precisely (Westerbeek, 2025). Still, it is essential to combine the use of AI tools with your own expertise. Algorithms can detect statistical patterns that you may not be able to identify on your own. However, it is the human researcher who evaluates the significance and translates the formulations into meaningful research questions.

Application of AI in literature review and theoretical framework development

Reviewing the literature and building a theoretical framework is a critical phase of scientific work, as it provides an understanding of the existing findings and theories related to the problem. Traditionally, this process has required painstaking searches of bibliographic databases, as well as reading and synthesising a large number of papers (Milašinović & Milojević, 2016). Artificial intelligence significantly speeds up and systematises these activities. Today, natural language processing (NLP) algorithms can automatically search scientific databases and extract key information from texts. There are AI tools that can generate summaries of research papers, identify the key topics, methodologies, and conclusions of different studies, and even rank the relevance of papers in relation to a given topic (Christou, 2023). Such tools enable a researcher in sports management to quickly identify what is already known. For example, in the field of sports analytics, if we want to develop a theoretical framework for analysing team performance, an AI tool can search through hundreds of sports science papers and extract the primary performance factors identified by other authors (Hammes et al., 2022). This is how a knowledge base is formed on which the researcher builds their theoretical model.

A concrete example of the application of AI in literature reviews is the use of platforms such as Semantic Scholar or Dimensions, which utilise AI to enhance search functionality. These platforms may recommend papers similar to those already selected by the researcher or point out papers that are often cited together (implying thematic connection). In the context of, say, sports marketing, if we are investigating the impact of AI on consumer fan behavior, AI search can not only find works from sports literature, but also pull relevant theories from general marketing or psychology that we could fit into a theoretical framework (e.g., consumer engagement theory or a decision-making model with personalized recommendations) (Westerbeek, 2025).

Additionally, AI visualisation tools can be helpful at this stage. There is software that uses machine learning to map out conceptual connections between concepts or authors. For example, an online map of terms in the field of "Technology and Innovation in Sport" could show how terms such as "artificial intelligence", "sports analytics", "fan engagement" and "content personalization" are related in the literature, which helps the researcher to structure the theoretical framework and see where his study fits into existing knowledge (Akbari et al., 2024).

Using AI to review literature significantly saves time and can increase coverage (the researcher is less likely to overlook any important work). However, it is worth noting that algorithms can sometimes favour more popular or recent sources, thereby overlooking some classic works or those in other languages. Therefore, it is recommended to combine AI searches with traditional methods and the expertise of librarians or information specialists. With this caveat, the application of AI at this stage enables a richer and more up-to-date theoretical framework, which is particularly beneficial in areas such as technology in sports or international sports management, where information is rapidly changing and being disseminated globally.

Application of AI in the development of hypotheses

The formulation of hypotheses often builds on a theoretical framework and represents a transition from a general idea to specific assumptions to be tested. Traditionally, hypotheses are developed either deductively (from theory) or inductively (from the observation of data) (Milojević, Milojković, & Janković, 2012). Artificial intelligence can provide support in both approaches. On the one hand, analysing large datasets with the aid of machine learning can reveal new correlations or patterns that inspire the formulation of a hypothesis (Rahmani et al., 2024). Generative AI models, on the other hand, can help formulate a hypothesis based on an existing theory, conducting a kind of "mental simulation" of logical connections.
For example, let us consider the area of financial management in sports: we have an extensive database of financial indicators for clubs (budgets, player salaries, ticket revenues, trophies won, etc.), and we want to test a hypothesis about the factor that most affects the club's financial success. Machine learning (e.g., a random forest algorithm) can analyse data and show that, for example, investing in the development of young players is a strong predictor of long-term financial success. On this basis, the researcher can formulate a hypothesis: "Clubs that invest more in their own youth school achieve better financial performance over a period of 5 years, compared to clubs that do not have such investments." This hypothesis is inductively inspired by AI data analysis.

In the field of sports analytics and performance, AI can also generate hypotheses. One example is the concept of "ghosting" in basketball – an algorithm analyses much footage of games and learns to predict the movement of players on defence based on the movement of the attack. Suppose deviations are observed (e.g. specific defensive patterns are less effective against certain tactical formations). In that case, this can lead to a hypothesis such as: "Switching defence is less effective against teams that use five-width attacking defence, compared to man-to-man defence." This hypothesis would then be formally tested by the researcher (Beal et al., 2019).

Generative models like GPT-4 can also help by "thinking" about theoretical connections. For example, a researcher may ask a model, based on a specific theoretical framework (e.g., organisational culture theory), to propose possible hypotheses about the influence of culture on the performance of sports organisations. The model, based on its "knowledge", could generate hypotheses such as: "Organisations in sports with an inclusive and team culture have a higher level of sports results than those with a pronounced hierarchical culture". The researcher would then assess the meaningfulness and originality of these proposals before adopting or modifying them (Christou, 2023).

A key benefit of AI at this stage is unlocking potentially hidden insights and reducing human bias (e.g., the researcher may have assumptions that AI data analysis may question). Still, there is also a risk: if we rely too heavily on AI without understanding the context, we can obtain "hypotheses" that statistically hold water but are theoretically or practically irrelevant. That is why caution and a combination of AI insights with theoretical knowledge of the domain are necessary. In the realm of ethics and integrity in sports, for example, AI could suggest hypotheses about the factors influencing the occurrence of match-fixing by analysing data on betting odds. However, the researcher must assess whether these hypotheses are consistent with social and legal realities.

Application of AI in the preparation of the research design

The preparation of a research design involves planning the entire research strategy, including the choice of methodology (e.g., survey, experiment, case study), the definition of variables and measurement methods, as well as procedural steps (Milojević, Milašinović, & Milojković, 2025a). Artificial intelligence can improve this phase through simulations and optimisations. One approach is to utilise AI simulation models to evaluate various research scenarios before they are implemented in reality. For example, in the field of sports event and venue management, a researcher could use agent-based simulation (a type of AI simulation) to test the research design of the impact of arena crowding on spectator satisfaction. Before collecting the actual data, the

AI simulation can generate a scenario with different audience layouts, noise levels, entry/exit flows, etc., allowing the researcher to identify which factors are likely to be significant and how best to measure them. This approach helps optimise research design, e.g., determining whether to use observation, sensory data, or post-event surveys to measure the viewer experience (Dorey, 2024).

You can also assist in selecting methods and instruments. Expert systems can make a method recommendation based on the nature of the data and the research question. In sports management, which uses both quantitative and qualitative methods, such systems can be helpful for less experienced researchers. For example, if the goal is to explore how coach leadership affects athlete motivation, an AI tool might recommend a mixed-methods approach (a combination of an athlete survey and coach interviews) because it recognises that leadership is a complex phenomenon that requires both quantitative and qualitative perspectives. A similar tool, based on previous research, can suggest validated questionnaires or metrics (for example, recommending the use of MLQ questionnaires for leadership style).

In the realm of technology and innovation in sports, where new devices and software are frequently experimented with, AI can aid in designing experiments. For example, if a new AI application is tested to improve shooting in basketball, AI could generate experimental groups and protocols (training with AI assistance vs. without it) and predict through simulation how many players would be needed to detect the difference in shooting accuracy with a certain reliability. Such power analyses are traditionally done with statistical formulas, but the AI approach can be more flexible when the design is complex.

Another example is the optimisation of testing schedules in research. In the field of sports physiology and training (which falls under sports management when dealing with the management of training programs), if the research involves measurements at different stages of the season, AI can help to find the optimal testing schedule that reduces disruption to the training process and maximises the informativeness of the data (Canzone et al., 2025). The algorithm can take into account the competition calendar, player load, and other factors, and suggest when to perform performance measurements so that representative yet practically feasible data are obtained.

The application of AI in research design promises more efficient and intelligent planning, but the researcher must remain "behind the commands". AI suggestions should not be blindly accepted, they are the starting point for discussion. Additionally, the ethical aspect of design remains a human responsibility: AI can assist with logistics or statistics, but only the researcher (and the ethics committee) can determine whether the design is ethically

acceptable to participants. In areas such as sports psychology or fan research, this is especially important. AI might suggest invasive methods of data collection for better results. However, the researcher must also consider the privacy and well-being of the subjects.

Application of AI in specimen determination

Sampling involves the selection of subjects or entities to be included in the research, creating a sample that is representative of the population, thereby ensuring that the conclusions are generalizable (Milojević, Milašinović, & Milojković, 2025b). Artificial intelligence can contribute to more intelligent and unbiased sampling, particularly in situations where large datasets are available. Machine learning algorithms can analyse populations (e.g., all professional football clubs, or all members of a fitness organisation) and identify classes or groups with similar characteristics (Ahmić, Delić, & Karić, 2024). Based on this, AI can recommend a sample that proportionally encompasses all relevant groups, rather than having the sample randomly or biasedly selected (Kim et al., 2024).

For example, in sports marketing research that examines fan attitudes, a fan database (such as a million followers of a club on social media) can be segmented by an AI clustering algorithm into multiple groups, including young urban fans, older local stadium-goers, and foreign fans. If a researcher were to select a sample for a survey, AI segmentation would ensure that an appropriate number of respondents are taken from each of these groups, thereby increasing representativeness (Mogaji & Jain, 2024). Traditional segmentation might overlook some fine subgroups, whereas AI also identifies patterns in multidimensional data (e.g., it considers age, geography, and online behaviour patterns simultaneously).

In international sports management, where the population can be global, AI also plays a significant role (Maksimović, Damnjanović, & Mrdak, 2025). Let us say a study is being conducted on the management of football academies across different continents. To make the sample of academies representative, AI can utilise data from FIFA and other sources to classify academies by size, funding level, and continental region, and then randomly draw a number from each class. Thus, we obtain a sample that includes, for example, small academies from Africa, as well as large European, Central South American, and other institutions, according to their representation in the population.

AI can also be useful for "hard-to-come" samples, e.g., professional sports managers (club directors) are few and busy, so that standard sampling would be limited. However, AI search (through web scraping) can identify all people

who match a profile (e.g., LinkedIn or public manager profiles) and their contact information. The researcher can thus obtain a comprehensive census of the population, which makes it possible to sample without missing some members of the population just because of ignorance of their existence.

In addition, the AI can assist in determining the sample size through advanced power analysis (power analysis). Traditional approaches require assumptions about variance and effect; AI can simulate data under different assumptions and determine how many subjects are needed to detect the expected effect with a certain level of certainty. For example, in a study of the impact of a new training program on performance improvement (the area of human resources and leadership in sports, because it includes the management of the training process), AI can simulate the performance of 100, 200, 500 athletes and determine that it takes at least 150 athletes in each group to see a statistically significant improvement of 5%. This prevents the research from starting with either a tiny sample (which would lead to insufficient statistical conclusions) or an excessively large one (which wastes resources unnecessarily).

With all its advantages, it is worth noting that the quality of the sample depends on the quality of the population data. If the data is incomplete or biased, AI will also draw wrong conclusions (for example, if we rely on social media, we may overrepresent the younger population). Therefore, the researcher must still critically validate the proposed sample. However, on the whole, AI enables more sophisticated sampling, which is especially valuable in sports management, where populations can be heterogeneous (including fans, athletes, clubs, and sponsors) and globally distributed.

Application of AI in data collection

The data collection phase is at the heart of any empirical research, and the use of artificial intelligence at this stage significantly changes traditional approaches. First of all, AI enables the automated and continuous collection of large amounts of data that were previously unavailable. In the context of sports, one of the most visible forms is the use of computer vision and sensors to collect data on sports performance. For example, in sports like football and basketball, AI object recognition systems in videos can automatically track player positions, ball movement, speed, distance travelled, and other metrics during a game, eliminating the need for manual logging (Hammes et al., 2022). Such systems (known in sports analytics as player tracking systems) generate massive datasets that are the basis for further performance research and tactical analysis. Previously, such a detailed level of data was virtually impossible to collect in academic research; today, it is the standard, and AI ensures that this data is accurate and immediately available to researchers.

In the field of sports marketing, AI facilitates the collection of data about fans and consumers (Bešlin Feruh & Knežević, 2025). NLP algorithms can monitor social networks and collect posts, comments and opinions from fans about a particular club or event (Westerbeek, 2025). Instead of relying on traditional questionnaires, the researcher can collect real-time data from Twitter, Instagram, fan forums, and other platforms, where AI filters out relevant messages (e.g., those expressing satisfaction or dissatisfaction) and can even categorise sentiment (positive, negative, or neutral). In this way, rich qualitative and quantitative data are collected for the research on consumer attitudes in sports. Similarly, AI-powered chatbots can be used to collect data through interactive surveys. Fans can provide answers through a conversation with the chatbot. At the same time, the AI ensures that questions are asked in a logical sequence and that answers are recorded accurately and consistently.

In the domains of human resources in sports, AI contributes to the collection of data on athletes or employees themselves. For example, wearable technologies (smartwatches, trackers) use AI to monitor athletes' physiological data (heart rate, heart rate variability, fatigue level) in real time. These devices automatically store data in databases that researchers can access for load training analysis, injury prevention, and the like (Canzone et al., 2025). Thus, data collection is integrated with the daily activities of athletes, and AI algorithms can even alert the researcher/coach when they notice an anomaly (e.g., a spike in fatigue indicators that signals a risk of injury).

To collect data in international and comparative studies, AI facilitates the integration of data from different sources and languages. For example, if the research involves analysing sports governance policies in different countries, translation AI (such as Google Translate powered by deep learning) allows the researcher to collect and understand documents in multiple languages. In this way, data (e.g. statutes of sports federations, sports laws) can be aggregated and analysed without a language barrier.

Robotics should also be mentioned: in some experimental conditions, physical robots or drones powered by AI can collect data. For example, autonomous drones are used in stadiums to record matches from different angles, providing researchers with unique visual data. In sports sociology or event management, AI surveillance cameras can count visitors, track the flow of crowd movement, and perform similar activities during significant events, generating data for analysing the organisation and safety of events (Dorey, 2024).

It is essential to note that AI is not limited to quantitative data. It can also aid in collecting qualitative data. For example, speech-to-text AI tools can transcribe interviews with athletes or managers more quickly than a human can, allowing researchers to easily generate text ready for qualitative analysis.

Of course, integrating AI into data collection also comes with challenges: large automatically collected datasets may contain errors or irrelevant information, so filtration is required (which in turn can be done by AI based on predefined criteria). Also, there is the issue of privacy. The collection of data about fans or athletes through AI tools must comply with ethical norms and regulations (e.g. GDPR in Europe). However, with adequate safeguards and transparency towards respondents, AI enables the collection of more prosperous and more diverse data than ever before, opening up new opportunities for research in sports management.

Application of AI in Conducting Research

Conducting research refers to the practical implementation of planned procedures, such as administering surveys, conducting experiments, or performing field observations (Milojević, Milašinović, & Milojković, 2025a). Artificial intelligence can also be helpful as an "assistant" to a researcher in real time. In the case of experimental research, AI can automatically control certain conditions of the experiment. For example, in an experiment that observes how different lighting conditions in a sports hall affect player performance (the area of sports facility management), an AI system connected to bright lighting can autonomously change lighting conditions according to a preset protocol and measure player performance parameters (shooting, reactions). This reduces the possibility of human error in experimentation and ensures consistency (Dorey, 2024). The researcher can observe the experiment, while the AI ensures that the predicted duration of each experimental phase is accurately respected and that the stimuli are displayed as planned, among other tasks.

In surveys, implementation often faces the problem of respondents' responses (Milašinović & Milojević, 2016). AI can improve this process through personalisation and interactivity. As mentioned, a chatbot or virtual interviewer can guide the respondent through the questions in a more natural way than a classic form. This is not only data collection, but also real-time adaptation: if a respondent skips a question or provides an incomplete answer, the AI interviewer can immediately ask a follow-up question or clarify the ambiguity. In fan satisfaction surveys, this approach can yield better quality answers because it is similar to a conversation rather than filling out a formal questionnaire (Westerbeek, 2025).

In qualitative research, implementation often involves interviews or focus groups. AI can help the moderator here. For example, if it is a focus group with athletes about the impact of technology on training, an AI voice recognition system can simultaneously create a transcript of the conversation (which frees up the moderator to focus on the dynamics of the group). Even more

advancedly, an AI assistant can suggest a moderator during a break to ask a follow-up question about something that has been mentioned frequently, if the algorithm detected that all participants were emphasising “real-time feedback” as important. The moderator did not examine this in detail, but the AI could discreetly signal that topic. This is an experimental possibility that must be used carefully to avoid disrupting the natural flow of conversation, but it does demonstrate the potential role of AI in fieldwork.

Another area is longitudinal and monitoring research. If the research lasts for an extended period (weeks, months, or years) and requires tracking of subjects, the AI can maintain contact and track the data between formal collection sessions. For example, in research on the development of sports skills in children (sustainable development and the social aspect of sport, as it concerns development through sport), children can receive AI coaches on mobile devices that ask them daily tasks or questions (such as keeping a diary). The researcher thus conducts the research continuously in practice, and the AI collects and filters this daily information. Similarly, in athlete health management, an AI application can continuously monitor an injured player's recovery (self-assessments of pain, exercises done at home), all of which are part of the implementation of a planned rehabilitation study.

In operational terms, AI reduces the burden on the researcher during execution, it automates many routine tasks. However, there is also a dose of caution: relying too much on automation can be risky if unforeseen situations arise. The AI will strictly follow the protocol and may not notice if, for example, a participant feels unwell during an experiment (which a human researcher immediately registers and intervenes). Therefore, the best practice is for the AI to provide support while the researcher oversees the research process and is prepared to respond. On the whole, well-implemented AI can make conducting research in sports management more efficient, consistent, and less prone to error, freeing up researchers' time to focus on the essential aspects of interaction and observation.

Application of AI in Data Analysis

Data analytics is a field where artificial intelligence has already made a significant impact and continues to expand its reach. Traditional statistical methods remain the foundation of research analysis. However, AI provides the capability to process vast amounts of data and detect complex patterns that are beyond the reach of classical methods. In sports management, the variety of data, such as quantitative (numbers, metrics) and qualitative (text descriptions, interviews), makes AI particularly useful.

For quantitative data, extensive and multi-dimensional sets, machine learning provides advanced analysis techniques. In the field of sports analytics (sports performance analysis), deep learning is often used for predictions and classifications. For example, neural networks can analyse data from an entire season of matches (including player statistics, shot positions, and match flow) and predict the probability of a team winning under different conditions (Xu & Baghaei, 2025). Such models are significantly more flexible than traditional regression models because they can account for nonlinear relationships and interactions among multiple factors. For sports team managers, this kind of data analysis can provide insights such as: "What is the optimal composition of the team against a particular opponent?" or "How does a certain style of play affect the outcome against different strategies of the opponent?". In scientific work, a researcher can use these models to test hypotheses indirectly. For example, if the hypothesis is that ball possession contributes most to victory, the AI model will implicitly demonstrate this through the importance of that variable in predicting outcomes (Hammes et al., 2022).

In sports marketing, the analysis of big fan data (demographics, buying habits, social media interactions) favours the application of cluster analysis and recommendation algorithms. Machine learning can segment fans and detect patterns that classical analysis might not (Akbari et al., 2024). For example, it has been discovered that a group of fans rarely attend the stadium but spends a significant amount on the club's online store, which leads to targeted marketing efforts towards this group. For the researcher, such patterns can confirm theoretical assumptions about fan types or lead to the development of new theories of fan segmentation.

Qualitative data can also be analysed using AI techniques. Text mining and natural language processing algorithms can process interview transcripts, open survey responses, or media articles. In the field of organisational culture of sports clubs, for example, a researcher can collect public statements from coaches and management, and apply NLP to identify dominant themes and tone (Galily, 2018). AI can quantify how often values such as "team", "family", "winning mentality" are mentioned in club communication and compare this to the team's success, providing empirical insight into whether a particular type of rhetoric (culture) correlates with results. Traditional qualitative analysis relies on manual coding, whereas AI can quickly sift through thousands of words and provide structure to the data (e.g., thematic mapping).

Social network analysis, aided by AI, is another powerful tool relevant in, for example, international sports management. AI algorithms can map networks of influence – how ideas or trends spread among global sports organisations. For example, observe how innovation (such as the introduction of VAR technology)

is disseminated from one league to another through personal and institutional connections. Such an analysis would be impractical if done manually, but AI can combine data (articles, press releases, and Twitter interactions of league managers) and detect network patterns.

In addition to all these powerful techniques, explaining the results is also important. The modern trend in AI is explainable AI, as deep models often function as a "black box"; scientists are developing methods to explain why the model arrived at a particular conclusion. This is especially important in research, as it relates the results to the theory. In sports management, if an AI model says that a particular factor is crucial, the researcher must understand and explain why. For example, suppose a neural network shows that team cohesion (measured by the number of assists) is the most predictive of ranking. In this case, it is associated with the theory of team effectiveness in the discussion – AI, therefore, it not only provides a number, but also encourages theoretical interpretation (Xu & Baghaei, 2025).

It is also worth noting that you can analyse the "what-if" scenario. In sports finance (financial management), AI models can be used for simulations: What if the budget were increased by X? How would this affect the team's performance? Or, in the context of sustainability: what if a club invests in "green" infrastructure? How does this affect revenues and its image in the long run? Through reinforcement learning or advanced simulations, AI can iteratively examine a variety of scenarios and produce both the best and worst outcomes, which for the researcher means a rich dataset to analyse without having to recreate it all in reality.

Overall, the data analysis phase is perhaps the segment of research where AI most dramatically enhances researchers' abilities. With AI, researchers in sports management can extract maximum information from the available data and uncover subtle connections, from the sports field to the club's board of directors, which would otherwise go unnoticed. The key task of the researcher remains to interpret these findings in the context of sports management and assess their significance, a task that AI cannot perform independently.

Application of AI in hypothesis testing

After analysing the data, researchers proceed to formal hypothesis testing to decide whether the results obtained support or refute the initial assumptions (Milojević, Milašinović, & Milojković, 2025b). Artificial intelligence can also offer helpful tools at this stage, complementing standard statistical tests. Essentially, hypothesis testing relies on statistical logic (p-values, confidence intervals, etc.), but AI can enhance the robustness and generalizability of these tests.

One way is to utilise bootstrap and simulation techniques, powered by AI algorithms, to enhance the reliability of hypothesis testing. For example, if we investigate a hypothesis in the field of sports economics: "Home fields significantly affect a team's victory", we would generally apply a statistical test (e.g. t-test or regression with a home run indicator). AI can run thousands of simulations with different subsets of data (e.g., different leagues, different seasons) to determine if the hypothesis holds in all these scenarios. If the AI determines that, say, 90% of simulations have an impact and 10% do not, the researcher gains a more nuanced insight – the hypothesis is correct most of the time. However, there are exceptions (for instance, leagues without an audience during a pandemic). This approach is an example of Monte Carlo simulations that can be accelerated and automated by AI.

In sports psychology or sociology of sports, hypothesis testing often involves comparing groups or examining correlations. AI can enhance this process through advanced techniques, such as Bayesian statistics. The Bayesian approach, which is easier to implement with powerful computers and AI algorithms, gives probabilities to hypotheses instead of just yes/no decisions. For example, if the hypothesis is "Coach mentoring program increases athlete satisfaction", instead of a classic test that gives $p<0.05$ or not, the Bayesian method (with AI sampling algorithms) can say "there is a 95% probability that the effect of a positive sign is even higher than a certain threshold". It is a more informative result for sports management, as it quantifies belief in a hypothesis (Christou, 2023).

Artificial intelligence can also help detect interactions and moderating effects during hypothesis testing. In complex systems (and sports are certainly complex), often the hypothesis of the type "X affects Y" is not universally true, but depends on some third factor Z. AI algorithms can sift through the data and observe: "yes, X affects Y, but more strongly under high Z than low Z conditions". For example, the hypothesis: "Fan engagement on social media increases stadium attendance", AI analysis could reveal that this is true for small clubs. In contrast, for large ones with a traditional fan base, the effect is not significant. This leads the researcher to include the interaction term (X * club size) in the testing process and formally confirm that the interaction is significant (Westerbeek, 2025). Without AI, such insight might not have been evident before testing.

It also allows you to test hypotheses on multiple levels. In sports management, data is often organised in a hierarchical structure (e.g., players within teams, teams within leagues). AI tools can facilitate multi-level modelling and even suggest the best model. Instead of manually trying out different models, the AI can examine what level of variation (player, team, league) has how much impact

on the outcome and suggest: "you need a random effect at the team level". Thus, hypotheses can be tested taking into account the data structure, e.g., the hypothesis that "coach leadership style affects team cohesion" is tested more effectively if it is recognised that players within the team share specific characteristics (multilevel regression), which AI can automatically identify before the analysis itself.

In an applied sense, some sports organisations are already using AI to test "hypotheses" in practice before implementing them. For example, a club might hypothesise that a 10% change in ticket prices will affect attendance. The AI system can use historical data and machine learning to simulate that scenario as a test. If the prediction shows a drop in visits greater than the revenue would compensate, the hypothesis "we will increase total revenue by increasing the price of tickets" would be discarded. This is a blend of research and practice: sports managers test hypotheses about business decisions through AI models before making a decision (Rahmani et al., 2024).

In academic research, hypothesis testing remains largely a human-driven process, with the help of statistical software; however, AI enhances the process by offering deeper validation and exploration. Of course, the results provided by AI must be interpreted within the framework of classical testing (the journal will not accept "AI said the hypothesis is 95% probable" without formal statistics). Still, for the researcher himself, AI is a powerful ally in verifying the stability of his findings and ensuring that the conclusions reached are more solid and general than they would be based on a single testing method.

Application AI: generalisation and interpretation of results

Once the results have been obtained and the hypotheses tested, there is a phase of interpretation (what these findings mean in a broader context), and generalisation (to what extent the conclusions of the research can be applied beyond the framework of a specific sample or case) (Milojević, Milašinović & Milojković, 2025b). Artificial intelligence can help researchers think more deeply about the implications of the results and check how their conclusions might hold up in different scenarios.

One way is to use AI for meta-analysis and integration with existing knowledge. If a researcher wants to put their results in the context of the literature, AI tools can automatically compare their findings with those of earlier studies. For example, if research has shown that digital interaction with fans significantly increases their loyalty, an AI literature search can quickly list which previous studies have yielded similar or opposite results (Westerbeek, 2025). This helps interpretation: whether the finding aligns with the trend (which would

strengthen it) or is an exception (which requires explanation). Traditionally, researchers would make manual comparisons, but AI can find relevant references in real-time while writing a discussion.

It also allows generalisation testing through scenario simulations. Let us say that the research was conducted on a sample of medium-sized European football clubs, and the researcher wants to generalise to larger clubs or to other sports. An AI model trained on the collected data could be fed the parameters of a large club (e.g., a significantly larger budget, a larger fan base) and see if the relationships learned by the model still hold. If the model predicts similar relationships (e.g., that investment in marketing correlates with fan engagement to a similar extent for large clubs), this suggests a generalisation. If not, then the interpretation emphasises a limitation: the results may only apply to the middle of the spectrum of organisations. In other words, AI can be used as a "what-if" machine and for scientific interpretation: what if we change the conditions, what happens to the main finding? (Xu & Baghaei, 2025).

In terms of theoretical interpretation, AI can also offer the formulation of new theoretical assumptions. Through associative search, AI tools can suggest theories from other disciplines that could explain the observed results. For example, if research in sports management reveals that teams that communicate more internally achieve better results, AI could identify an analogy in business management (the theory of "organisational learning") and thus help the researcher interpret their findings through the lens of that theory (Maksimović & Raič, 2012). This enriches the discussion and generalisation to the level of broader governance, not just sports.

Multilingual AI tools can help to interpret results globally. For example, suppose a paper has implications for international management. In that case, AI translation can allow a researcher to read similar studies or relevant documents in Chinese, Russian, or German and incorporate those perspectives into interpretation. Thus, the generalisation is not limited to the Anglo-American context, but also considers how the culture or sports system in other countries would affect the implementation of the results.
When it comes to sustainability and the social aspects of sport, the interpretation of results often involves broad implications (e.g., how sport affects the community). AI social media analytics could be used to interpret how the public reacts to a particular phenomenon. For example, suppose the study results indicate that the introduction of AI coaches improves athletes' performance. In that case, the generalisation should also consider social acceptance. AI can analyse attitudes on social networks about AI coaches (e.g., enthusiasm vs. fear of dehumanisation of sport). The researcher can incorporate these insights into the interpretation of the impact of this trend on the future of sport. Thus, AI enables interpretation not only within a narrow

scientific domain but also in a broader social context by collecting additional data to refine the results.

Finally, AI can help visualise results in an intuitive way, which is an important aspect of interpretation when presenting findings. Advanced AI tools can create interactive graphs or simulations that illustrate, for example, how a change in one variable affects another according to a research model. The researcher thus gains a deeper understanding of the relationships and can more easily explain them to the audience (Kim et al., 2024).

Of course, interpretation remains a creative and critical act of the researcher. AI provides information and perspectives, but the meaning of these findings (what they reveal about the reality of sports management) will be formulated by the researcher, using both logic and intuition. AI can serve as a sparring partner in this process, testing and provoking different views, which leads to a richer and more solid final interpretation and generalisation.

Application of AI in reporting and dissemination of findings

The final stage of scientific research is the disclosure of findings through the writing of a report, scientific paper or presentation, and their dissemination to a broader audience (Milašinović & Milojević, 2016). Moreover, in this field, artificial intelligence brings interesting possibilities that can help researchers shape and disseminate their message.

First of all, AI writing assistants have developed enough to help with text assembly, grammar, and even wording suggestions. While the researcher is, of course, expected to write interpretations and conclusions, tools like Grammarly or more advanced language assistance models can suggest clearer ways of expressing oneself and help maintain an academically accurate writing style. For example, if a chapter has vaguely constructed sentences, the AI can suggest improvements or sentence variants that better convey meaning. This is also useful for researchers for whom writing in English (or another language) is not a strong point. AI helps to keep language from being a barrier to dissemination (Christou, 2023). In the context of the region, similarly, AI tools can help make the work in Serbian more polished in terms of spelling and style, which increases the credibility of the presentation of the findings.

Then, automatic generation of summaries is another AI functionality. A researcher, after writing a voluminous report or dissertation, can use AI to generate an abstract of, say, 200 words. Of course, that summary needs to be checked and refined, but it can serve as a good starting point covering the main results and implications (Westerbeek, 2025). This saves time and helps prevent forgetting anything crucial in the summary.

When it comes to visual representation, AI tools can automatically generate charts and infographics based on data. For example, instead of manually drawing charts in Excel, the AI platform can automatically identify from the dataset which visualisations best highlight the findings (e.g., recommend a heatmap for correlations, a line chart for trend over time, etc.) and even style them for use in a presentation or publication. In sports management, where the audience for results includes not only scientists but also practitioners (such as coaches and club managers), compelling visuals are key to capturing attention for the findings. AI-generated graphics with highlighted key figures can help managers more quickly orient themselves to research conclusions (Rahmani et al., 2024).

The dissemination of results today often goes beyond print publication. It includes blogs, social networks, and webinars. AI chatbots and virtual assistants are already being used in education; It is possible to imagine a researcher "storing" their work in an AI system that can then answer questions from journalists or audiences on a website in an interactive format. For example, after publishing research on sports marketing, an AI chatbot on the project's website could answer questions such as, "What is the main finding of the research?" or "How can this research help my sports club in practice?" This type of dissemination makes scientific work more accessible and practically applicable to the broader community, crossing the barrier of professional terminology.

Additionally, the translation AI enables the rapid dissemination of results worldwide. Research conducted in our region can be automatically translated into English and other languages (with subsequent human proofreading) and vice versa – relevant foreign research can be translated and published for the local audience in a language they understand. This is significant for sports management, where practitioners often want quick insights from science without language barriers. For example, the results of a study on the management of sporting events in Japan can be made available to Serbian organisers through AI translation and summarisation, which speeds up the flow of knowledge.

Ethics in reporting should not be forgotten either: AI can also be used to detect potential referencing failures or plagiarism. Before submitting the paper, the researcher can run AI checks to make sure that all sources are cited correctly and that there are no inadvertent overlaps with someone else's text. This is part of integrity in science (ethics and integrity in sport, applied to research work), and AI tools are becoming standard practice in many publishing houses for proofreading (e.g., systems for checking the similarity of texts).

As far as presentations are concerned (at conferences or when showing results to clients), AI can generate slide summaries or even extract soundbites, based on the work, suggest which three key points to highlight to the audience, without going into detail. In sports management, where you often present findings to people from practice, this ability to extract the essence and deliver it in a clear form is of great benefit.

Overall, AI does not change the essence of scientific findings themselves, but it does change the way they can be shaped and shared with the world. With the proper use of these tools, researchers can write and distribute their papers more quickly and effectively, increasing the impact of their research. However, as in other phases, AI is a support, not a substitute. The author's voice, style and critical thinking must remain authentic. AI can help make that voice heard more clearly and further, but the content of the message remains in the hands of the researcher.

Discussion

The analysis of the research process shows that artificial intelligence is becoming increasingly important in improving the efficiency and quality of scientific research in the field of sport management. The use of AI can accelerate the retrieval of relevant information, enable the processing of data sources that were previously underutilised such as detailed video and sensor recordings, and reveal patterns that a human researcher might not recognise. In each stage of the research process, from the initial definition of the problem to the final preparation of the report, we identified specific ways in which AI can be applied and supported these explanations with examples from various subdisciplines of sport management.

One of the main advantages of AI is its ability to expand both the volume and the pace of research while accuracy is preserved. Tasks that would require months of work for a human researcher, including literature review and extensive data collection, can be completed by AI tools within days or weeks (Rahmani et al., 2024). This allows researchers to address broader questions and to respond more quickly to developments in the sports industry. AI also reduces manual and repetitive work such as interview transcription, data coding and the preparation of graphical outputs. This creates space for researchers to focus on the interpretation of results and on the implications of their findings.

Not all areas of sport management benefit equally from AI. Some have undergone substantial transformation while others are still in the early stages of adopting such tools. Sport analytics and sport marketing are among the most advanced areas, which is documented in the literature (Hammes et al., 2022;

Westerbeek, 2025). In these fields AI directly contributes to applied outcomes. Clubs employ data specialists who extract insights that support competitive advantage on the field or in the marketplace. Other areas, for example sport law, sport policy and sport ethics, have only recently begun to integrate AI into research. Even so, the potential is evident. AI supported analysis of legal documents in sport organisations can reveal variations and best practices in governance models, work that would normally require extensive legal effort (Galily, 2018). Ethical questions are also emerging. When AI is used for decision making, for example in officiating systems or in algorithms that detect doping or match manipulation, researchers must consider how integrity is safeguarded. Studies of integrity therefore require the evaluation of algorithms with a focus on fairness and potential bias (Kim et al., 2024). These developments suggest that research topics will continue to evolve. AI supports existing inquiries but also opens new questions, including how AI influences athletic performance or how it introduces operational and moral challenges into sport.

Interdisciplinarity is gaining further importance. Sport management has always been multidisciplinary, and the integration of AI strengthens the need for collaboration with experts in informatics, statistics and related fields. Research teams in the future are likely to include AI specialists in order to make full use of technological capabilities (Rahmani et al., 2024). This also affects the education of future sport managers and researchers. Curricula increasingly combine sport related subjects with data science and foundational AI concepts (Maksimović and Raič, 2012). In several regional contexts initiatives are emerging that strengthen analytical and technological competencies among sport professionals. This trend is expected to increase the need for research and literature in local languages.

A central question concerns the reliability and validity of results obtained with the support of AI. Complex AI models, such as deep neural networks, are sensitive to the quality and structure of the data on which they are trained. If the data are biased or unsuitable, the model may produce inaccurate results. In sport, for example, a predictive model trained on data from one league may not generalise to another league. A frequently cited example is an injury prediction model trained on NBA players that does not transfer well to European basketball because of differences in style of play and seasonal structure (Hammes et al., 2022). Researchers must therefore apply rigorous model validation and cross validation and should avoid uncritical acceptance of AI generated insights. AI should be regarded as a tool for generating hypotheses and for computational assistance, while scientific confirmation remains grounded in statistical testing and theoretical reasoning.

Ethical considerations form another essential dimension. AI supported data collection raises questions related to privacy (Christou, 2023). Researchers must understand ethical standards governing the use of large datasets and algorithms. If AI is used to analyse fan behaviour on social networks, one of the questions is whether individuals are aware that their posts are being used for research and whether any form of consent is required (Westerbeek, 2025). Even when publicly available data such as tweets may be accessed without explicit permission, researchers remain responsible for protecting the identity of individuals. Transparency is also expected, and the academic community encourages authors to disclose at least the basic characteristics of the applied models such as algorithms and hyperparameters in order to support replicability. Although replication is not common in sport management research, the integration of AI increases the importance of proper documentation.

The practical implications for sport organisations and decision makers are considerable. Organisations that support AI assisted research are likely to gain timely and relevant insights. Managers who understand the basic principles of AI are better equipped to interpret analytical reports. Major clubs and leagues are already forming analytical departments that use AI for both sport related and business-related purposes. This trend illustrates the convergence of scientific work and practical decision making. A plausible future scenario is that sport organisations will increasingly conduct their own AI assisted studies. For example, a league may engage an AI team to assess the effects of a rule modification on fan satisfaction or on the attractiveness of the game and may then publish the findings as part of its decision-making process. This would further reduce the distance between academic studies and internal organisational analyses.

The study also highlights several limitations. Excessive reliance on AI may weaken critical judgement or reduce the researcher's analytical engagement. This phenomenon, known as automation bias, appears when AI generated results are accepted without sufficient evaluation (Mogaji and Jain, 2024). Since sport management involves dimensions that are not always quantifiable, such as leadership style or group cohesion, there is a risk of overlooking important qualitative aspects. The most effective approach combines the computational strengths of AI with human expertise, interpretive reasoning and contextual understanding.

Although this study focuses on current applications, future developments will shape sport management research even more strongly. Advanced AI tools adapted specifically to sport related contexts are expected to emerge. Large language models trained on sport science and sport management literature

may function as specialised research assistants that address complex thematic questions. Considering the pace of technological development, tools available today will likely evolve into substantially more sophisticated systems within the next decade. These developments will influence both academic research and the practical operation of sport organisations.

At the end of the discussion, we can say that AI does not fundamentally alter the principles of the scientific method, there are still problems, data, analysis, and conclusions, but it does change the tools and the speed with which we reach those conclusions. In this sense, AI is becoming an integral part of the scientific research methodology, just as computers and the Internet were decades ago. Sports management, like other social and interdisciplinary sciences, is at an exciting stage where the synergy of man and machine can bring breakthroughs in knowledge. Establishing this synergy in a proper, ethical and critical way is a challenge, but also a necessary step forward.

Conclusion

Artificial intelligence is increasingly shaping scientific research in the field of sport management, offering new possibilities for data collection, analysis, interpretation, and dissemination. This paper examined different phases of the research process and outlined how AI can be integrated into each of them, supported by examples from various areas of sport management. The analysis indicates that AI can assist in defining research problems, accelerate literature searches, support the development of hypotheses, optimise research design, improve sampling decisions, facilitate automated data collection, assist in executing complex procedures, expand analytical possibilities, enhance hypothesis testing, support the interpretation and verification of results, and improve the accessibility of reporting and dissemination.

AI contributes to time and resource efficiency, greater precision in data processing, and the ability to address research tasks of larger scope than before. Researchers more easily connect their findings with practical applications, while sport organisations gain access to insights derived from extensive datasets processed at a much faster rate than was previously possible (Rahmani et al., 2024; Westerbeek, 2025). This reduces the gap between academic work and its practical use in sport management.

The integration of AI into research also involves certain risks and challenges. It requires an understanding of how the tools operate and of their limitations. Overreliance on algorithms without critical evaluation may lead to inaccurate conclusions, especially when data are incomplete or biased. Transparency in methodological procedures, clear reporting of algorithms used, data protection, and adherence to ethical standards remain necessary components of research

practice (Christou, 2023). Fundamental scientific principles do not change with the introduction of AI; they are applied through new technical frameworks.

Future research would benefit from mapping the specific effects of AI use across different areas of sport management. For instance, an empirical meta-analysis could quantify the extent to which AI-based analytics improve prediction accuracy in sport economics or sport marketing. It would also be valuable to develop a framework or set of best-practice guidelines for researchers seeking to integrate AI into their work, including recommendations for tools, team training, and protocols for ensuring the quality of results. At the regional level, encouraging publications in local languages that present examples of AI use in sport research could support wider adoption among practitioners and researchers.

Contemporary sport management is entering a period in which the use of AI will become standard practice. Artificial intelligence will not replace the researcher, but researchers who use AI may take the lead over those who do not. Collaboration between experts in sport and experts in technology is therefore essential to ensure that AI contributes to the advancement of scientific knowledge and the development of the sport system. Technological progress should not diminish the human values embedded in sport; rather, AI can support a deeper understanding and reinforcement of those values.

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