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Received 2025-03-14

Accepted 30/01/2025

Printed ISSN: 2352-989X

Online ISSN: 2602-6856

The Effectiveness of Artificial Intelligence Utilization in Physical Education and Sports Curricula Among Sports Science Students in Light of Selected Variables

BERROUDJ Kamel 1*

¹ University of Setif 2, Algeria, k.berroudj@univ-setif2.dz, Laboratory of Physical Activity Sciences, Sports, and Public Health

ABSTRACT

This study aims to investigate the use of artificial intelligence (AI) applications in sports sciences. The researcher employed a descriptive methodology, with a sample consisting of 40 students from the Department of Sports Sciences at Setif 2 University. The researcher collected data through a questionnaire and used appropriate statistical methods, specifically the t-test for differences, to test the study's hypotheses. The results indicated that the use of AI applications among students was at a moderate level, with no statistically significant differences based on gender or academic level. The study recommends enhancing the integration of AI technologies into educational programs to improve students' competencies and advance sports training practices.

Keywords: Artificial Intelligence, Physical Education and Sports, Students

*Corresponding author

INTRODUCTION

Technology's quick development has drastically changed many industries, including education and sports. One of the most significant innovations is artificial intelligence (AI), which has become a potent instrument for improving educational opportunities and performance in sports sciences. Students, particularly those studying physical and sports sciences, now have access to cutting-edge solutions that make learning and performance analysis easier because of the widespread use of AI technologies. Artificial intelligence has become increasingly incorporated into the sports sector, and its many uses include improving training, performance analysis, and injury prevention.

Cossich, for example, emphasizes how AI, in conjunction with other technologies like virtual reality and data visualization, is essential to enhancing sports performance analysis (Cossich, 2023). AI integration helps teachers create courses that use these technologies to improve learning outcomes and help athletes hone their talents (Lee & Lee, 2021).

Additionally, Glebova discusses how the spread of AI technology is changing the sports industry's labor market and pointing to a change in the skill sets that future professionals will need (Glebova, 2024). The impact of AI is also changing the sports sciences teaching environment for students. Students can interact more with complex topics when AI-driven tools are used in educational settings to provide more tailored learning experiences.

For instance, students can receive real-time feedback and data analysis through the use of AI in biomechanics and sports training, which is critical for understanding performance metrics and enhancing athletic abilities ("Artificial Intelligence Approach in Biomechanics of Gait and Sport: A Systematic Literature Review," 2023).

Research shows that AI applications in sports science are improving teaching strategies and preparing students for future employment in a more technologically advanced workplace, which supports this trend (Naughton, 2024). Furthermore, a growing corpus of research highlighting the importance of (AI) technologies has coincided with the swift adoption of these technologies in sports. In order to fully realize AI's potential, interdisciplinary approaches are necessary, as evidenced by recent research that shows how it has revolutionized training techniques, performance prediction, and injury risk assessment (Hammes et al., 2022; Sperlich, 2023).

(AI) It is a vital tool in contemporary sports science because it can analyze enormous volumes of data and produce useful insights, transforming how athletes prepare and compete (Seshadri et al., 2019).

In summary, incorporating artificial intelligence (AI) into education and sports science is a noteworthy development that is changing these subjects' prospects. (AI) technologies can potentially improve student learning and athlete performance as they develop further, which will help bring about a more significant shift in humankind's future.

This study aims to investigate the discrepancy between AI technologies' potential and how students in sports sciences and physical education actually use them.

2. Methods

The researchers used the descriptive method appropriate for studying phenomena in their natural context without manipulating variables. This method allows the collection of quantitative and qualitative data to describe, analyze, and interpret variables' relationships. It was selected due to its relevance to the study's purpose, which is to examine students' use of artificial intelligence in the field of physical and sports education. Based on previous studies, the researchers developed the research tool.

Population:

The study population consisted of students from the Department of Physical and Sports Activities Sciences and Techniques at the University of Setif 2, representing the target group directly related to the research topic.

Sample:

We selected the participants using a random sampling method. The final sample included 40 students majoring in physical education and sports. The random selection ensured equal opportunity for all members of the population to participate in the study.

2.1 Domains of Research

Spatial Domain:

We conducted the study at the University of Setif 2, a representative academic environment for the sample.

Temporal Domain:

The study ran from September 24 to October 10, 2024, during which we administered the research instrument and collected data.

2.2 Measurement instrument

The researchers created a questionnaire to gauge students' usage of artificial intelligence to gather data. There are three parts to the instrument:

Section One: Demographic Data (specializing, academic level, and gender).

Section Two: Artificial Intelligence Applications in Physical and Sports Education: Knowledge and Understanding (7) items using a three-point Likert scale.

Section Three: Individual application of AI to academic performance (7 items), each with a three-point Likert scale metric.

Methods of Statistics:

SPSS software was used for statistical analysis. The study used the Student's t-test, mean, and standard deviation as statistical methodologies.

3. Results

Table 1. Variations in Artificial Intelligence Tool Use Associated with the Gender Factor

Dimension	Gender	Sample Size	Mean	Standard Deviation	T-Test	sig	df
Total Score	Male	30	49.63	4.52			

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of the Questionnaire	Female	10	54.10	2.73	2.97	0.005	38
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Significant when "p" is less than or equal to 0.05.

Table (1) shows significant age-related disparities in the application of artificial intelligence in favor of females, with a mean score of 54.10 for females and 49.5 for males. The estimated T-test value was 2.97, with a statistical significance of 0.005, less than the 0.05 criterion.

Table 2. Differences in the Use of Artificial Intelligence Tools Attributed to the Academic Level Variable

Dimension	Gender	Sample Size	Mean	Standard Deviation	T-Test	sig	df
Total Score of the Questionnaire	master	20	51,45	3,79	0.98	0.33	38
	lisance	20	50,05	5,13			

Significant when "p" is less than or equal to 0.05.

Table (2) shows that there are no significant variations in the use of artificial intelligence attributed to the academic level variable, as the estimated T-test value was 0.98, with a statistical significance of 0.33, which is greater than the 0.05 threshold.

4. DISCUSSION

This study revealed disparities in the application of artificial intelligence based on gender. The study relates these findings to various psychological, social, educational, and technological reasons, implying that women utilize AI applications and platforms more frequently. (Hsoman al-Samarrie et al. 2024) It discovered that perceptions of artificial intelligence in education differ between male and female users. Meanwhile, Sandeep Kakar et al. (2024) found that AI applications improved social connections among female students.

This was corroborated by the study of Andie et al. (2024) Tangonna, who found that artificial intelligence has a more substantial impact on female pupils than male students in social interactions. In contrast, the study outcomes by Shailendra Kumar and Sanghamitra Choudhury (2022) revealed that males have more favorable opinions toward AI than females.

The researchers linked this to male supremacy in scientific domains. Similarly, the study of Stephen Cave et al. (2023) discovered that women are severely underrepresented in AI.

Similarly, a study by Pablo Dorta et al. (2024) discovered that female researchers use AI technologies at a 7% lower rate than male researchers. Furthermore, Mariano Mendez Suarez et al. (2024) found that men, on average, have a favorable opinion of the effect of science and technology, which leads to more favorable sentiments regarding artificial intelligence. Conversely, women have a more negative perception of the impact of science and technology, which leads to less favorable opinions regarding AI.

The results of the second hypothesis revealed no disparities in the application of artificial intelligence based on education level. The researcher attributed these findings to the similarity in technical skills caused by the extensive presence of technology in students' daily lives and their practical use. Oluwanofe Segun and Petrus Jacobus (2024) stressed the relevance of self-efficacy in influencing the adoption of AI tools.

The researcher also believes that intrinsic motivation, as well as the availability of tools and materials at all levels, substantially impacts students' preparedness to learn technology; as a result, educational institutions should provide various resources to help all pupils. This point was stressed in a study by Liang Li et al. (2021), which focused on incorporating artificial intelligence into physical training and teaching systems to improve training and teaching quality and efficiency.

The study by José Carlos Vázquez Parra et al. (2024) highlighted the importance of students' perception and adoption of AI technologies in higher education, with a focus on motivation and dedication to learning. On the other hand, Bo Zhang et al. (2022) found that AI apps improve physical education to enhance students' overall health and cultural levels.

This study's findings contradict those of Ajda Fošner (2024), who found that the use of artificial intelligence varied according to academic degree, with higher educational levels connected with greater self-confidence in using these technologies.

Marie Hornberger and others (2023) found that a person's education level dramatically affects their confidence in using AI technologies, especially for those with technical training and experience. Similarly, Polona Tomic and Maja Rozman (2023) showed important differences in how undergraduate and graduate students view the role of AI in their studies, with graduate students generally having a better understanding, especially regarding extra educational help. This indicates that differences in education levels lead to gaps in understanding AI tools.

Hasan M. et al. (2024) found that academic degrees substantially influence levels of AI literacy among university students, showing a link between education and comprehension of AI technologies. Furthermore, the educational level may indirectly impact AI utilization via interaction with these tools. Roxana Yolanda Castillo-Acobo et al. (2023) investigated this possibility, discovering that educational level directly impacts the deployment of AI in the classroom.

In a separate context, Dong, Z., and Sha, N. (2023) research on recreational sports education predicted that the future of education would see a seamless integration of AI with teaching methods, emphasizing the importance of educators becoming adept in various AI technologies.

4. CONCLUSION

In conclusion, this study investigated the practicality of applying artificial

intelligence applications in sports sciences among students. The findings analysis found that men and women approach this modern technology differently for various reasons. On the other hand, the data revealed no significant variations in AI usage depending on educational level, indicating that students of all backgrounds may easily use AI technologies.

In conclusion, this study investigated the practicality of applying artificial intelligence to sports sciences among students. It found that men and women approach this modern technology differently for various reasons. On the other hand, the data revealed no significant variations in AI usage depending on educational level, indicating that students of all backgrounds may easily use AI technologies.

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