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Exploring the Intersection of Technology and Sport: Assessing the Usage and Awareness of Artificial Intelligence in Sports Performance Among Male Intervarsity Handball Players

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ABSTRACT

The use and knowledge of artificial intelligence (AI) in improving sports performance among male intervarsity handball players was the focus of this research, which examines the relationship between AI and sports. Data from 120 Pakistani intervarsity handball players was gathered using a survey questionnaire. The researcher utilized survey research design as part of a quantitative research strategy. The purpose of the research was to examine the association between AI awareness, usage and sports performance. Simple random sampling was used by the researcher. The researcher used a self-administrated questionnaire as a research tool. Pearson correlation analysis for relationship and SPSS 26, version for analysis of collected data was used by the researcher. The results show a strong positive relationship between enhanced sports performance and the use of AI technologies,

	including wearable technology. Furthermore, it was shown that athletes with higher levels of AI awareness performed better, indicating that a greater understanding of AI technology might improve sports performance. This study demonstrates how artificial intelligence (AI) has the potential to transform sports training and performance optimization, offering coaches, players, and sports organizations insightful information on how to use AI to achieve optimal performance in competitive sports.
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INTRODUCTION

The term "sport" describes entertaining and competitive activities that may be done alone or in conjunction with others to enhance a person's mental and physical abilities (Sakar, 2022). Handball is among the most popular sports in the world. Because of its high scoring, teamwork, and fast-paced action, this exciting sport is enjoyed by millions of people worldwide. It takes certain physical, technical, tactical, and psychological abilities to progress to a higher level in such a popular sport (Kocaeksi & Gazioglu, 2014). Recent years have seen a notable advancement in AI technology that has had a big influence on many different industries. The bookmaker's odds are greatly impacted by AI's ability to forecast game outcomes (Li & Xu, 2021). Beyond our present understanding, the use of AI is continuing to change sports in many and unimaginable ways. AI has been used lately to define every aspect of sports at every level possible, enabling the transformation of data and analysis and transforming the way that games are planned and executed on the playing field (Molavian et al., 2023). A lot of artificial intelligence (AI) is being employed in sports. Using wearable sensors and cameras, for example, computers can accurately collect physiological data from athletes during practice and competition. Applying AI technology to the design of college sports training and teaching systems can satisfy the needs of various students, achieve the development goal of personalized, customized service, and serve as a foundation for future advancements in AI in sports training and instruction (Wei, Wang, & Li, 2021). Sports have evolved and changed as a result of scientific and technological advancements. Our everyday lives now include artificial intelligence (AI), from speech recognition software to programs for finding our way around. In other scientific and technological domains, including sports, scientists are using artificial intelligence more and more (Wei et al., 2021). Artificial intelligence's use in sports has revolutionized the sector in a number of ways and brought about many advantages. But there are also serious issues with its use in relation to safety and fairness in sports (Gajendra, 2013).

1.3 Objectives of the Study

- i. To access the usage and awareness of artificial intelligence in sports performance of intervarsity handball players
- ii. To investigate the relationship between artificial intelligence (AI) usage and sports performance of intervarsity handball players
- iii. To find out the association between artificial intelligence awareness and sports performance among intervarsity handball players

1.4 Research Questions

RQ 1: What are the usage and awareness of artificial intelligence in sports performance of intervarsity handball players?

RQ 2: What is the relationship between artificial intelligence (AI) usage and sports performance of intervarsity handball players?

RQ 3: What is the association between artificial intelligence awareness and sports performance among intervarsity handball players?

1.5 Research Hypothesis

Ha1: There is significant the relationship between artificial intelligence (AI) usage and sports performance of intervarsity handball players

Ha2: There is the significant association between artificial intelligence awareness and sports performance among intervarsity handball players

LITERATURE REVIEW

Globalization has always been a trend in the cultural form of sport. Throughout the 19th century, modern sport expanded as a physical culture that was competitive, regulated, and measurable, first inside the British Empire and then much beyond (Rowe, 2020). One of the most important sectors of entrepreneurship is sports. Many individuals can work in the sports business, but it also helps the state solve a number of social concerns by providing tax income to municipal and state budgets (Savic et al., 2018).

AI is being widely used in several sports-related fields. Computers can accurately record athletes' physiological and athletic data during practice or competition, for example, thanks to cameras and wearable sensors. Trainers may develop personalized training plans for players and identify the best game strategy by using AI technology to analyze this data (Li & Xu, 2021).

Concepts from artificial intelligence (AI) are perfect for creating efficient systems for feedback and assessment in the sports sector. Since the first boom in the 1970s and 1980s, the use of AI techniques has been restricted to certain domains, such as sports, where their application has become essential for evaluating sports data (Molavian et al., 2023). A growing number of sports academics are examining whether artificial intelligence (AI) will impact sports training and if it will change people's long-term jobs and lifestyles. They are specifically examining whether college sports teaching can provide better training options for both teachers and students, which would enhance both the quality of sports training and the physical attributes of students (Wei et al., 2021).

The future of sports is being reshaped by the intimate relationship between artificial intelligence and sports, which is radically altering the experiences of players and viewers. It is anticipated that artificial intelligence would become more prevalent in sports (Meriçelli et al., 2023). While maintaining justice in decision-making, there is a worry that the sports business may lose some of its innate appeal as technology pervades every facet of the activity. It is important to remember that certain flaws in sporting events greatly add to their appeal. Thus, in order to guarantee the scientific and prudent use of artificial intelligence in sports, a great deal of comprehensive study is required (Ding, 2019).

RESEARCH METHODOLOGY

The researcher used a quantitative approach, using a survey research design to evaluate how male intervarsity handball players used and understood artificial intelligence (AI) in their sport. Pakistan intervarsity handball players were the population of the study. A sample size of 120 participants was established. The main method of gathering data was a self-administered questionnaire that allowed participants to directly answer questions about how they felt about and utilized artificial intelligence in sports.

The researcher used simple random sampling procedure for selecting participants in an objective way and ensure a representative sample. By reducing selection bias, this method made sure that every player in the population had an equal chance of being selected for the sample. Aspects such as athletes' knowledge with AI tools, their comprehension of how these technologies might improve performance, and their overall awareness of AI applications in sports were all included in a questionnaire.

SPSS 26, a statistical software program that enabled a thorough examination of the answers, was used to analyze the data gathered from the questionnaires. To ascertain the direction and degree of the association between characteristics like AI awareness and athletic performance, the Pearson correlation was used. This statistical method provided illumination on whether there is a significant correlation between handball players' awareness and performance, which advances our understanding of how artificial intelligence (AI) could improve sports performance.

RESULTS

Several statistical techniques were used to analyze the study's present results.

Results of Correlation Coefficients

By determining the direction and intensity of a link between two variables, correlation offers information about how those variables may affect one another. To determine if changes in one variable are linked to changes in another, researchers might use correlation coefficients.

Table 4.1 Highlights the relationship between artificial intelligence (AI) usage and sports performance of intervarsity handball players(n-120)

Variables		Training Integration	Wearable Devices	Sports Performance
Training Integration	Pearson Correlation	-		
	Sig. (2-tailed)			
Wearable Devices	Pearson Correlation	.879**	-	
	Sig. (2-tailed)	.000		
Sports Performance	Pearson Correlation	.700**	.787**	-
	Sig. (2-tailed)	.000	.000	

The associations between intervarsity handball players' use of artificial intelligence (AI) and their athletic performance are shown in Table 4.1. Training Integration and Wearable Devices have a high positive link, as shown by the Pearson correlation analysis. Additionally, there is a strong positive connection ($r = 0.700$, $p = 0.001$), between training integration and sports performance, suggesting that better sports performance is associated with greater AI integration in training. Wearable technology also has a substantial positive association ($r = 0.787$, $p = 0.001$). with sports performance, which supports the idea that AI may help athletes perform better. These correlations are

statistically significant, indicating a solid connection between the use of AI and improved performance.

Table 4.2 Highlights the association between artificial intelligence awareness and sports performance among intervarsity handball players(n-120)

Variables		AI Knowledge	Technology Benefits	Sports Performance
AI Knowledge	Pearson Correlation	-		
	Sig. (2-tailed)			
Technology Benefits	Pearson Correlation	.912**	-	
	Sig. (2-tailed)	.000		
Sports Performance	Pearson Correlation	.802**	.832**	-
	Sig. (2-tailed)	.000	.000	

The relationship between variables is statistically significant and shows a very high positive association between AI knowledge and technology. The relationship between AI knowledge and sports performance is significantly positive ($r = 0.802$, $p = 0.001$), indicating that better sports performance is linked to more AI knowledge. Furthermore, highlighting the significance of AI advantages in improving athletic performance is the remarkable positive correlation of ($r = 0.832$, $p = 0.001$). between Technology advantages and Sports Performance. A strong association between AI awareness and athletic performance is confirmed by the statistical significance of both relationships.

DISCUSSIONS OF THE FINDINGS

These findings highlight the potential of artificial intelligence (AI) in optimizing athletic performance, reinforcing the importance of integrating technology in sports training. The study's findings indicate a significant positive relationship between the use of AI and sports performance among male intervarsity handball players. The analysis shows a strong correlation between the use of AI in training integration and sports performance, suggesting that the integration of AI tools in training helps enhance players' overall performance (Beal et al., 2019). Additionally, wearable devices, which are a form of AI technology, also show a positive impact on performance. Furthermore, the results show that improved sports performance is closely associated with increased awareness and understanding of AI technology. The relationship between sports performance and AI expertise shows that athletes who are more familiar with AI technologies often excel in their respective sports (Pottala, 2018). Furthermore, the significant association between the advantages of technology and athletic performance emphasizes how AI might improve players' performance. This suggests that learning about the benefits of AI and using it may both result in better sports performance (Nadikattu, 2020). Overall, the correlation analysis's findings show a strong, unique association between enhanced athletic performance and the use of AI technology. Athletes may really benefit from the use of AI technologies like wearable technology and training programs. Furthermore, raising players' awareness and comprehension of these technologies might increase these advantages even more, indicating that using and comprehending AI is crucial for reaching athletic peak performance (Wei et al., 2021). These results demonstrate the revolutionary potential of AI in sports and provide coaches and players with insightful information for improving training and performance plans.

CONCLUSION

Artificial intelligence (AI) in sports has shown significant potential for improving athlete performance, particularly for male intervarsity handball players. The results of this research demonstrate that enhanced sports performance is positively connected with both the use and awareness of AI, with wearable technology and training integrations being key AI tools. Additionally, athletes with greater understanding of AI technology often perform better, underscoring the need of ongoing education and AI integration into training regimens. AI has enormous potential for improving athletic results in the future and providing coaches and athletes striving for peak performance with insightful information as it continues to transform sports training and performance analysis.

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