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AI-DRIVEN PERFORMANCE AND SKILL ANALYSIS OF ELITE PLAYERS IN INTERNATIONAL WOMEN'S KABADDI TOURNAMENTS

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Abstract:

Kabaddi is a dynamic, high-intensity indigenous sport that demands exceptional physical fitness, tactical intelligence, and skill execution. With the growing participation and recognition of women's Kabaddi at the international level, there is an increasing need for scientific and objective performance evaluation methods. Artificial Intelligence (AI) has emerged as a powerful tool in sports analytics, offering data-driven insights for performance enhancement. The present study aims to analyze the performance and skill parameters of elite players participating in international women's Kabaddi tournaments using AI-driven techniques. Match statistics, video-based performance indicators, and machine learning models were used to evaluate raiding efficiency, defensive effectiveness, agility, endurance, and decision-making ability. The findings indicate that AI-based analysis provides accurate and unbiased evaluation of player performance, assists in talent identification, and supports strategic planning for coaches and selectors. The study concludes that integrating AI technology in women's Kabaddi can significantly improve performance monitoring and long-term athlete development.

Keywords: *Artificial Intelligence, Women's Kabaddi, Performance Analysis, Skill Assessment, Sports Analytics*

Introduction:

Kabaddi is one of the most popular traditional sports in India and has gained international recognition through professional leagues and world-level competitions. Women's Kabaddi, in particular, has witnessed remarkable growth in participation, performance standards, and global exposure. Despite this progress, performance evaluation in Kabaddi largely depends on subjective observation by coaches and selectors.

Artificial Intelligence (AI) has revolutionized sports science by enabling objective analysis through data mining, machine learning, and computer vision technologies. AI-driven performance analysis helps in identifying strengths, weaknesses, and tactical patterns of elite players. In women's Kabaddi, the application of AI remains limited, especially at the international competition level. Therefore, this study attempts to explore the role of AI in analyzing performance and skill components of elite women Kabaddi players competing in international tournaments.

Objectives of the Study:

1. To analyze performance indicators of elite women Kabaddi players using AI-driven methods.
2. To assess skill-related variables such as raiding, defending, agility, and decision-making.
3. To examine the effectiveness of AI tools in predicting player performance.
4. To highlight the importance of AI-based analysis in women's Kabaddi development.

Review of Literature:

Recent studies in sports analytics have shown that AI and machine learning techniques improve performance prediction and tactical evaluation in sports like football,

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cricket, and basketball. Researchers have reported that video-based AI systems effectively analyze movement patterns, reaction time, and skill execution. However, limited scientific literature is available on AI applications in Kabaddi, particularly in women's competitions. Existing Kabaddi-related studies primarily focus on physical fitness and notational analysis. This research bridges the gap by applying AI-driven performance analysis specifically to international women Kabaddi players.

Methodology:

The study adopted a descriptive and analytical research design.

Sample:

Elite women Kabaddi players who participated in selected international tournaments were considered for analysis.

Data Collection:

Match statistics obtained from official tournament records:

- Video footage of matches
- Performance indicators such as:
- Successful raids
- Successful tackles
- Bonus points
- Errors and fouls
- Movement speed and recovery time

AI Tools and Techniques:

Artificial Intelligence techniques such as:

- Machine Learning algorithms
- Computer Vision-based video tracking
- Performance clustering and pattern recognition
- were used to evaluate skill execution and performance consistency.

Statistical Analysis:

AI-generated data were analyzed to identify correlations between skill variables and match outcomes.

Results and Findings:

The AI-driven analysis revealed that:

Elite raiders demonstrated higher raid success rates and better decision-making under pressure.

Defensive players with quicker reaction time and better positioning showed higher tackle success rates. Movement pattern analysis indicated a strong relationship between agility and overall match performance.

AI models effectively predicted performance consistency across matches.

Discussion:

The findings support the growing role of Artificial Intelligence in sports performance analysis. AI provides objective, reliable, and real-time feedback, which is often missing in traditional coaching methods. In women's Kabaddi, AI-driven analysis can help coaches design personalized training programs, improve tactical strategies, and reduce injury risks. The study also highlights AI's potential in talent identification and performance benchmarking at the international level.

Conclusion:

The present study concludes that AI-driven performance and skill analysis is a valuable tool for evaluating elite players in international women's Kabaddi tournaments. Artificial Intelligence enhances the accuracy of performance assessment, supports data-driven decision-making, and contributes to the scientific development of women's Kabaddi. Integrating AI technology into training and competition analysis can significantly improve the quality and competitiveness of the sport.

Limitations of the Study:

- Limited number of tournaments analyzed
- Absence of biometric and psychological data
- Dependence on available video quality

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Future Scope:

Future research may include:

- Real-time AI analysis during live matches
- Integration of wearable sensor data
- Psychological and physiological performance indicators
- Comparative analysis between men's and women's Kabaddi

References:

1. *Patel, R., & Sharma, P. (2021). Performance indicators in Kabaddi: A scientific approach. International Journal of Sports Science, 6(2), 89–96.*
2. *Singh, A. (2020). Application of artificial intelligence in sports analytics. Journal of Physical Education and Sports Technology, 5(1), 12–18.*
3. *Williams, K. (2019). Machine learning and performance prediction in team sports. Sports Analytics Review, 10(3), 45–58.*

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