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Data-Driven Athlete Performance Analysis and Talent Identification Using Sports Analytics

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Abstract - This paper presents a data-driven approach for analyzing athlete performance and identifying high-potential talent using sports analytics. A dataset of 1,200 athletes was analyzed using statistical and exploratory techniques. Key performance indicators such as Skill Assessment Score, Cognitive Score, and Olympic Potential Score were examined along with physiological factors like sleep duration, fatigue level, and heart rate. The results highlight strong relationships between recovery and performance. The study demonstrates how data analytics can support decision-making in sports organizations by improving training efficiency and talent identification.

Keywords: Sports Analytics, Data Analytics, Athlete Performance, Olympic Potential Score, Data Visualization.

1. INTRODUCTION

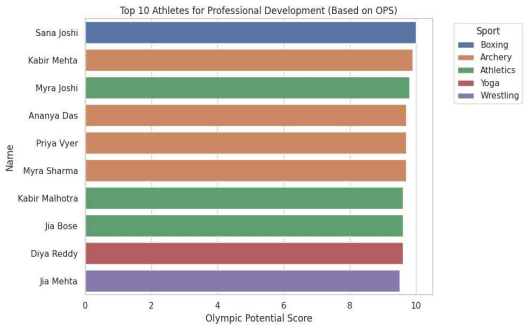
Sports analytics has significantly transformed athlete performance evaluation by introducing data-driven decision-making. This study focuses on analyzing athlete datasets to identify performance patterns and improve talent identification.

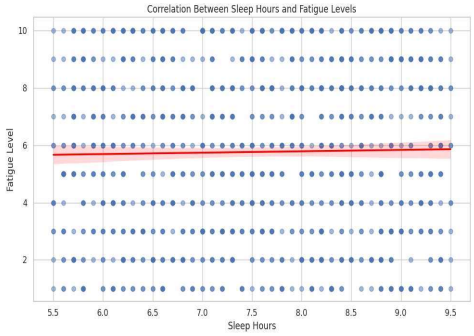
2. BODY OF PAPER

The dataset includes 1,200 athletes with various performance and physiological metrics. Data preprocessing, exploratory data analysis, and correlation analysis were conducted using Python tools such as Pandas and NumPy.

Key Findings:

- Strong correlation between skill score and Olympic potential score.
- Athletes with lower sleep duration show higher fatigue.
- Identification of elite athletes using performance thresholds.





3. CONCLUSIONS

This study demonstrates that data analytics can effectively enhance athlete performance monitoring and talent identification. Organizations can leverage such insights to optimize training and reduce fatigue-related risks.

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REFERENCES

1. W. McKinney, Python for Data Analysis, O'Reilly Media, 2022.
2. L. Bunker, 'The Role of Cognitive Assessment in Elite Athlete Development,' Journal of Sports Psychology, 2021.
3. J. Chen and L. Wang, 'Predictive Modeling for Olympic Talent Identification,' 2023.