Technical Documentation: Power BI Report on Football Performance Analysis

Title: Football Performance Insights

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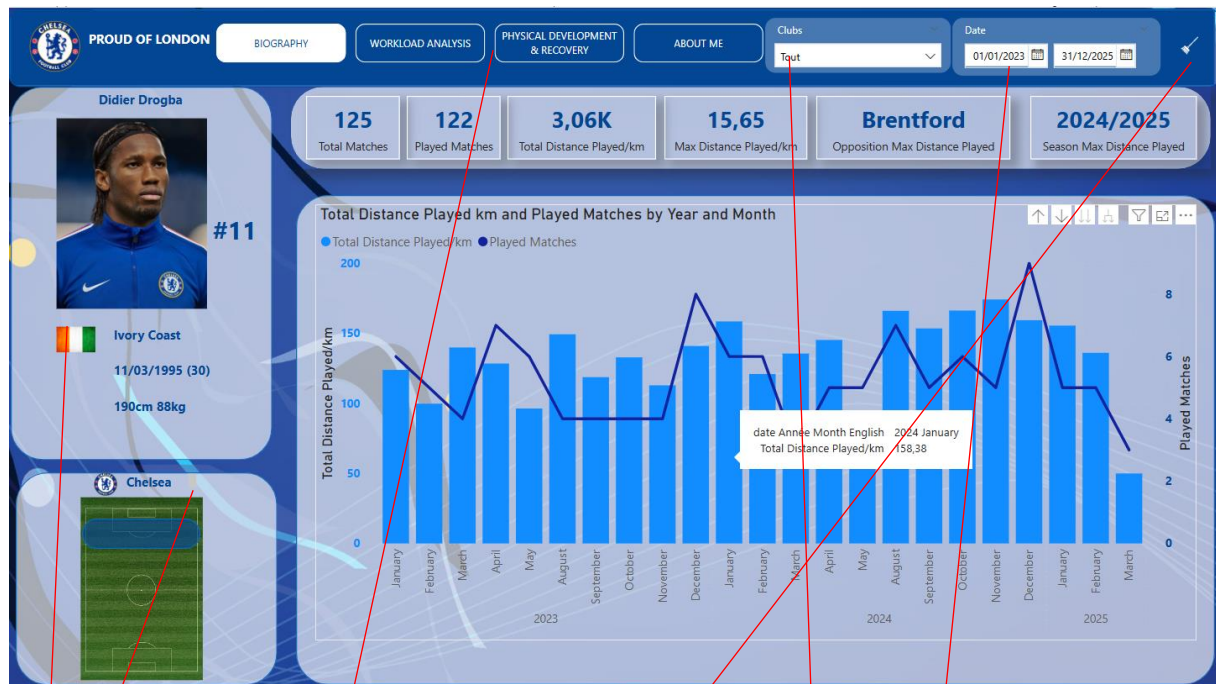
Date: March 2025

Competition: CFC Performance Insights Vizathon

Yvan Kouemou

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Player profile and position

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Total Matches

Definition:

The **Total Matches** metric represents the total number of matches played by the team. It is calculated by counting the number of unique match records where an opposition team is specified, ensuring that only official matches are considered.

```
Total_Matches =
COUNTAX(
    FILTER(
        'CFC GPS Data',
        'CFC GPS Data'[opposition_code] <> BLANK()
    ),
    'CFC GPS Data'[date].[Année]
)
```

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Played Matches

Definition:
The **Played Matches** metric represents the total number of matches in which the team actively participated. Unlike the Total Matches metric, this measure ensures that only matches where players covered a non-zero distance are included, filtering out cases where a match may have been recorded but not actually played.

```
Played_Matches =
CALCULATE(
    COUNTROWS('CFC GPS Data'),
    'CFC GPS Data'[opposition_code] <> BLANK(),
    'CFC GPS Data'[distance] > 0
)
```

Total Distance Played

Definition:
The **Total Distance Played** metric calculates the total distance covered by the team during matches where they were actively engaged. This measure only includes matches where a non-zero distance was recorded and ensures that the matches were official by checking that the opponent's information is present.

```
Total_Distance_Played =
CALCULATE(
    SUM('CFC GPS Data'[distance]),
    'CFC GPS Data'[distance] > 0,
    FILTER(
        'CFC GPS Data',
        NOT(ISBLANK('CFC GPS Data'[opposition_full]))
    )
)
```

Max Distance Played

Definition:
The **Max Distance Played** metric represents the maximum distance covered by a player in a single match, considering only official matches where an opponent is recorded. This helps in identifying peak physical performances during games.

```
Max_Distance_Played =
CALCULATE(
    MAX('CFC GPS Data'[distance]),
    NOT(ISBLANK('CFC GPS Data'[opposition_full]))
)
```

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Opposition with Maximum Distance Played

Definition:

The **Opposition_Max_Distance_Played** metric identifies the opponent against whom the maximum distance was covered in a single match. This helps analyze performance trends based on the opposition faced.

```
Opposition_Max_Distance_Played =
VAR MaxDist = CALCULATE(
    MAX('CFC GPS Data'[distance]),
    NOT(ISBLANK('CFC GPS Data'[opposition_full]))
)
VAR Opponent =
    SELECTCOLUMNS(
        FILTER(
            'CFC GPS Data',
            'CFC GPS Data'[distance] = MaxDist &&
            NOT(ISBLANK('CFC GPS Data'[opposition_full]))
        ),
        "Max_Opposition", 'CFC GPS Data'[opposition_full]
    )
RETURN CONCATENATEX(Opponent, [Max_Opposition], ", ")
```

Season with Maximum Distance Played

Definition:

The **Season_Max_Distance_Played** metric identifies the season in which the highest distance was covered in a single match. This helps track endurance performance trends over multiple seasons.

```
Season_Max_Distance_Played =
VAR MaxDist = [Max_Distance_Played]
VAR Seasons =
    SELECTCOLUMNS(
        FILTER(
            'CFC GPS Data',
            'CFC GPS Data'[distance] = MaxDist &&
            NOT(ISBLANK('CFC GPS Data'[opposition_full]))
        ),
        "Season", 'CFC GPS Data'[season]
    )
RETURN CONCATENATEX(Seasons, [Season], ", ")
```

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WORKLOAD ANALYSIS
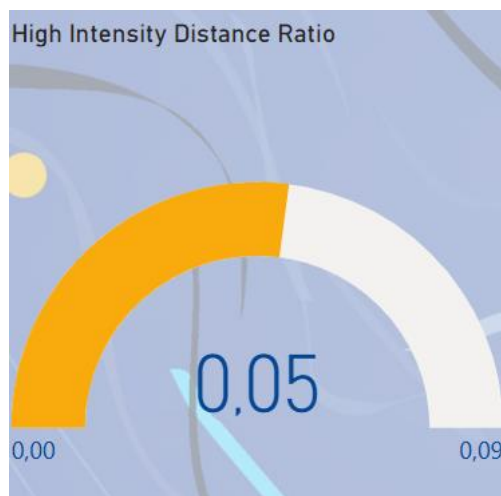
High Intensity Distance Ratio (HIDR) Gauge Analysis

Definition:
The **High Intensity Distance Ratio (HIDR)** represents the proportion of total distance covered at high intensity (speed above 21 km/h) compared to the overall distance covered in a match. This metric provides insight into the physical intensity of a player or team during a game.

Key Insight:
This metric is crucial for assessing **player workload and game intensity**. A **low HIDR** might indicate **fatigue, defensive tactics, or lack of explosive movements**, while a **high HIDR** signals **high work rate, aggressive play, or peak physical condition**. Monitoring this over time helps in **training optimization, injury prevention, and tactical adjustments**.

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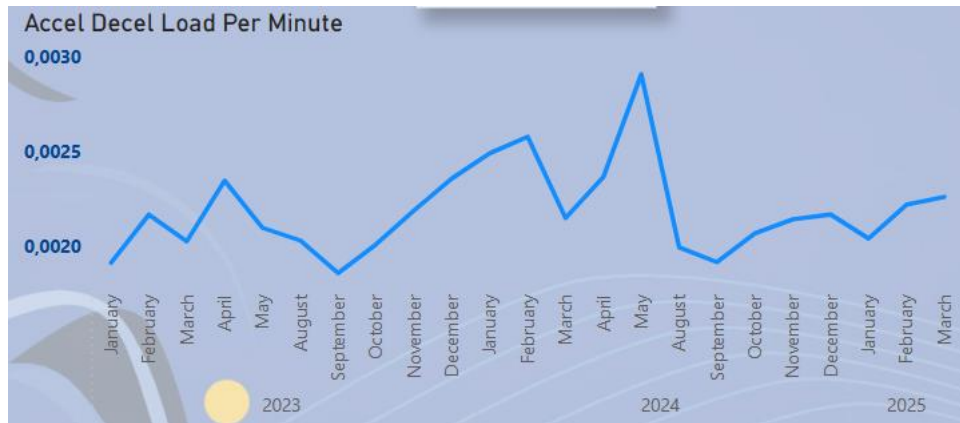
Acceleration-Deceleration Load Per Minute (ADLPM) – Line Chart Analysis

Definition:
The **Acceleration-Deceleration Load Per Minute (ADLPM)** measures the intensity of high-speed changes in movement (accelerations and decelerations) per minute of play. It provides insight into the physical demands placed on a player or team during a match.

Key Insight:
Fatigue and Recovery Monitoring:

- A **decreasing trend** in ADLPM over consecutive matches could indicate **fatigue or reduced explosiveness**, requiring **adjustments in training or recovery strategies**.

- Conversely, a **sharp increase** might signal **a physically demanding match or improved fitness levels**.

Performance Consistency:

- Players with **stable ADLPM values across matches** are likely **maintaining a consistent work rate**.

- Fluctuations in the trend could indicate **changes in playing style, tactical adjustments, or varying match intensity**.

Injury Risk & Load Management:

- **High and sustained ADLPM values** might suggest **increased injury risk** due to repetitive high-impact movements.

- A **gradual decline after peak values** might show **successful recovery management**.

Tactical and Position-Based Analysis:

- Midfielders and attackers may naturally show **higher ADLPM values** compared to defenders, reflecting **more dynamic movements**.

- Comparing ADLPM across **different positions** or **game phases** can help refine **tactical planning and player roles**.

Conclusion:

This metric is essential for evaluating **player workload, recovery, and match intensity**. By tracking trends over time, coaches and analysts can **adjust training loads, optimize player rotations, and improve overall performance management**.

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opposition	Max Distance
Brentford	15,65
Heidenheim	13,75
Borussia Dortmund	13,19
Wolverhampton Wanderers	12,54
Southampton	12,34
West Ham United	12,33
Real Madrid	11,95
AFC Bournemouth	11,95
Tottenham Hotspur	11,75
Aston Villa	11,74
Leicester City	11,40
Brighton & Hove Albion	11,19
Newcastle United	11,12

Maximum Distance Covered Against Each Opposition – Matrix Visualization

Definition:
The **Max Distance By Opposition** metric highlights the **greatest distance covered by a player in a single match against each opposing team**. This helps in analyzing physical performance relative to different opponents.

> **Key Insight:**
> **Performance Variation Across Opponents:**
>
> - o Identifying the **opponents against whom players cover the most distance** can highlight **high-intensity matches**.
>
> - o Lower values might indicate **more controlled or less physically demanding matches**.
>
> **Tactical and Match-Style Influence:**
>
> - o Teams that **force a high pressing game** or **play with a fast pace** may lead to higher max distances covered.
>
> - o Lower distances might indicate **possession-based playstyles or defensive strategies**.
>
> **Player Load and Fatigue Consideration:**
>
> - o If a player consistently records **high max distances against specific opponents**, it might suggest **physically demanding encounters**, requiring **load management**.
>
> - o A decline in max distance over multiple games against different teams could be a sign of **fatigue**.
>
> **Comparing Home vs. Away Performances:**
>
> - o If available, splitting the data by **home vs. away matches** could reveal whether **travel or environmental factors affect physical performance**.

Conclusion:

By analyzing max distance covered per opposition, teams can **better prepare for physically demanding fixtures, adjust tactics, and manage player workloads** for optimal performance and injury prevention.

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Average Distance Covered Against Each Opposition – Clustered Column Chart

Definition:
The **Avg Distance By Opposition** metric calculates the **average distance covered by a player against each opposing team**. This helps assess **physical performance trends based on different opponents**.

Key Insights:

Identifying High-Intensity Opponents :

o Teams where players record **higher average distances** might indicate **physically demanding matches** with **high pressing, counter-attacking football, or end-to-end play**.

o Conversely, lower distances might suggest **more controlled, possession-based games** with **less running involvement**.

Consistency in Physical Performance :

o If the **average distance covered fluctuates significantly across opponents**, it may indicate **tactical adjustments based on match difficulty**.

o Consistently **high averages** could signal **good endurance levels**, while declining trends might point to **fatigue issues**.

Comparison Across Seasons or Tournaments:

o Comparing values from **domestic vs. international matches** or **across different seasons** can highlight **whether playing styles evolve over time**.

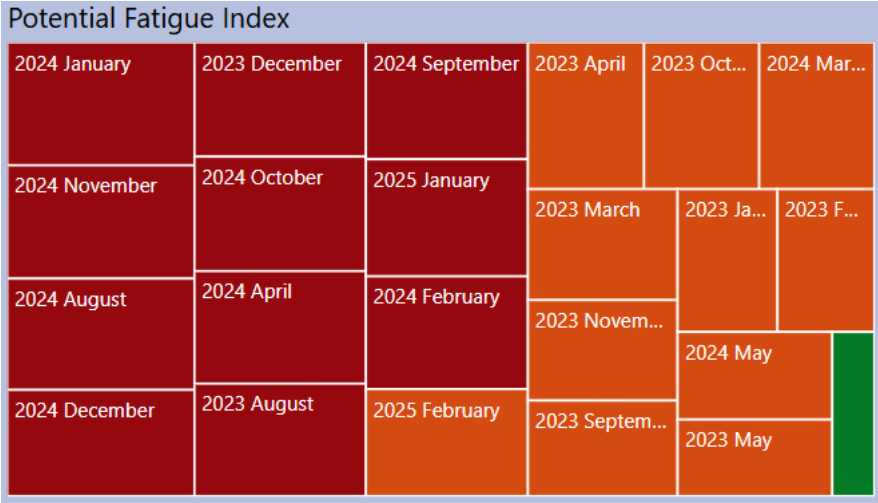o Analyzing this metric for **home vs. away matches** can also reveal **travel fatigue effects**.

Impact of Playing Position & Team Strategy:

o Midfielders and wing-backs are expected to **cover more distance** than defenders or strikers.

o If certain teams consistently result in **higher distances across all positions**, it could indicate **a physically demanding tactical approach**.

Conclusion:

This histogram provides valuable insights into **which teams demand the most effort from players**, helping **coaches, analysts, and fitness staff** tailor **match preparations, rotation strategies, and workload management** accordingly.

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PHYSICAL DEVELOPMENT & RECOVERY

Potential Fatigue Index

2024 January	2023 December	2024 September	2023 April	2023 Oct...	2024 Mar...
2024 November	2024 October	2025 January	2023 March	2023 Ja...	2023 F...
2024 August	2024 April	2024 February	2023 Novem...	2024 May	
2024 December	2023 August	2025 February	2023 Septem...	2023 May	

Red (4.5 - 10) → Indicates months with **very high fatigue levels**, suggesting **intense workload, fixture congestion, or poor recovery management**. These months require **immediate attention** to prevent injuries.

Orange (2.25 - 4.5) → Shows **moderate fatigue levels**, meaning players are under a **significant workload** but still within an acceptable range. Adjustments in training intensity or recovery protocols may be beneficial.

Green (0 - 2.25) → Represents **low fatigue risk**, indicating well-managed training and recovery cycles.

Potential Fatigue Index by Month and Year – Treemap Visualization

Definition:
The **Potential Fatigue Index (PFI)** evaluates a player's **fatigue risk** based on their **neuromuscular load** (acceleration/deceleration efforts) and **recovery status**. It helps pinpoint periods of **high physical strain** and potential injury risk.

Key Insights:

Seasonal Fatigue Trends:

- If **multiple months are in red**, it may correlate with **fixture congestion, pre-season workloads, or tournaments**.

- **A steady increase in fatigue over months** might suggest **progressive accumulation of workload without adequate recovery**.

Impact of Recovery on Fatigue:

- If high-fatigue months (red) align with **low recovery scores**, this suggests **players are not recovering well**, increasing injury risk.

- Well-distributed green months indicate that **training and recovery strategies are effectively balancing player workload**.

Comparing Across Seasons:

- By analyzing trends over multiple years, clubs can **assess whether current fatigue management strategies are improving** or if high-risk months remain a persistent issue.

- Helps **identify patterns related to schedule planning, travel fatigue, and recovery optimization**.

Conclusion:

This treemap provides a **clear visual representation of fatigue trends using intuitive color coding**, allowing performance staff to **anticipate high-risk periods, refine training loads, and enhance player recovery strategies to sustain performance and prevent injuries**.

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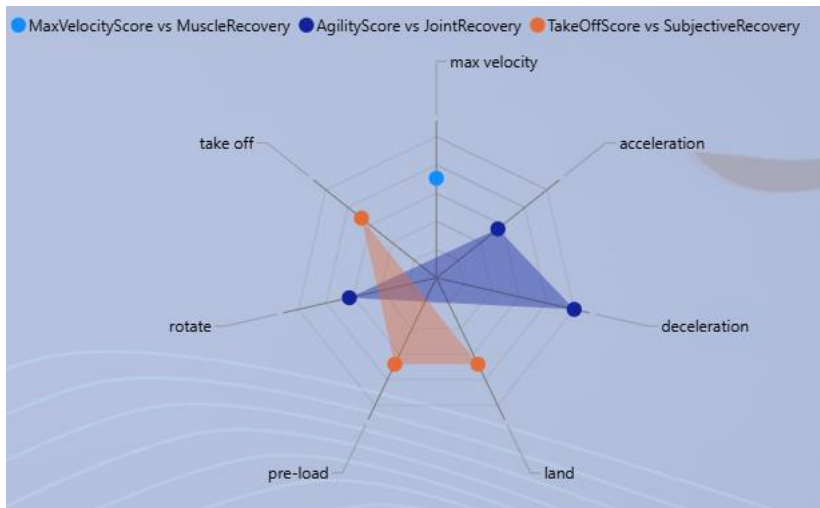
Performance vs. Recovery – Radar Chart Analysis

Definition:
This **radar chart** compares key **physical performance metrics** (Agility, Max Velocity, Take-Off) against **recovery indicators** (Joint Recovery, Muscle Recovery, Subjective Recovery). It helps assess how recovery influences a player's physical capabilities.

Key DAX Formulas:

Agility vs. Joint Recovery
Measures agility performance against joint recovery.

Insight: A **high ratio** indicates **good agility despite joint recovery**; a **low ratio** suggests that **poor recovery affects agility performance**.

Max Velocity vs. Muscle Recovery
Compares sprint performance with muscle recovery status.

Insight: A **high ratio** suggests players **maintain sprint performance despite muscle fatigue**; a **low ratio** indicates **muscle recovery impacts sprinting ability**.

Take-Off vs. Subjective Recovery
Evaluates explosive power against perceived recovery.

Insight: A **high ratio** shows players are **resilient despite subjective fatigue**, while a **low ratio** highlights **fatigue impacting explosive performance**.

Overall Insight :

- **Low ratios** indicate that **recovery issues affect performance**, highlighting the need for improved recovery strategies.

- **High ratios** signal that **players are performing well despite recovery challenges**, pointing to **effective training and recovery protocols**.

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High Speed Distance vs. Max Velocity Correlation – Line Chart Visualization

Definition:
This metric evaluates the relationship between **high-speed distance covered** and **max velocity performance** over time. By tracking trends across different months and seasons, it provides insights into how sprinting ability influences high-speed running capacity.

Key Insights:

Performance Trends Over Time:

- An **increasing trend** suggests that **max velocity improvements** are translating into **more high-speed running**, indicating better sprint endurance and efficiency.

- A **declining trend** may signal **fatigue, tactical shifts, or decreased sprinting capacity**, requiring further analysis of training loads and recovery.

Impact of Training & Recovery :

- **Plateaus or drops** in high-speed distance despite stable max velocity scores may indicate **fatigue accumulation** or **insufficient recovery strategies**.

- Periods of **high sprint performance** should align with **optimized training loads and recovery management** to sustain output.

Seasonal Sprint Performance Variability :

- If performance peaks occur **during pre-season or after recovery breaks**, it may highlight the **importance of structured speed training programs**.

- Performance **dips during congested match periods** could indicate the need for **better sprint load management**.
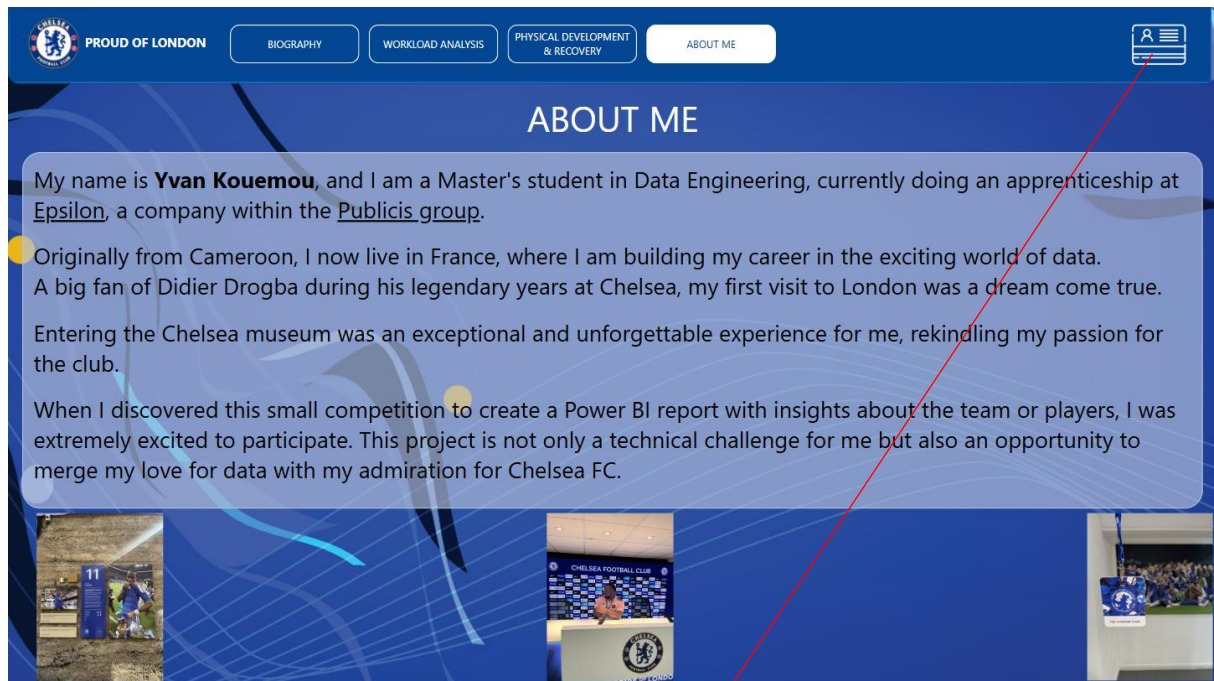
Comparing Across Seasons :

- **Consistent improvements** across multiple seasons suggest **effective long-term sprint training strategies**.

- **Recurring declines in sprint performance** may point to **fixture congestion, travel fatigue, or ineffective recovery protocols** that need addressing.

Conclusion:

This line chart helps **track sprint performance evolution**, enabling performance analysts to **optimize training loads, adjust recovery protocols, and enhance speed endurance**. By identifying **performance peaks and dips**, coaching staff can **fine-tune sprint training** to maximize high-speed running efficiency across the season.

ABOUT ME

Link profile: https://yvankouemou.carrd.co/