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aivisiontech

ai4sports

AI-BASED PERSONALIZED EARLY DIAGNOSIS OF SPORTS INJURIES AND INJURY PREVENTİON SOFTWARE

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Injuries in football are very costly to teams and can be prevented.

Estimated losses due to injury

197M £   20, 8M £   14M £

The cost of every muscle injury

200k £

Number of days lost due to injury

21.004

In Football,

Muscle injuries
90%
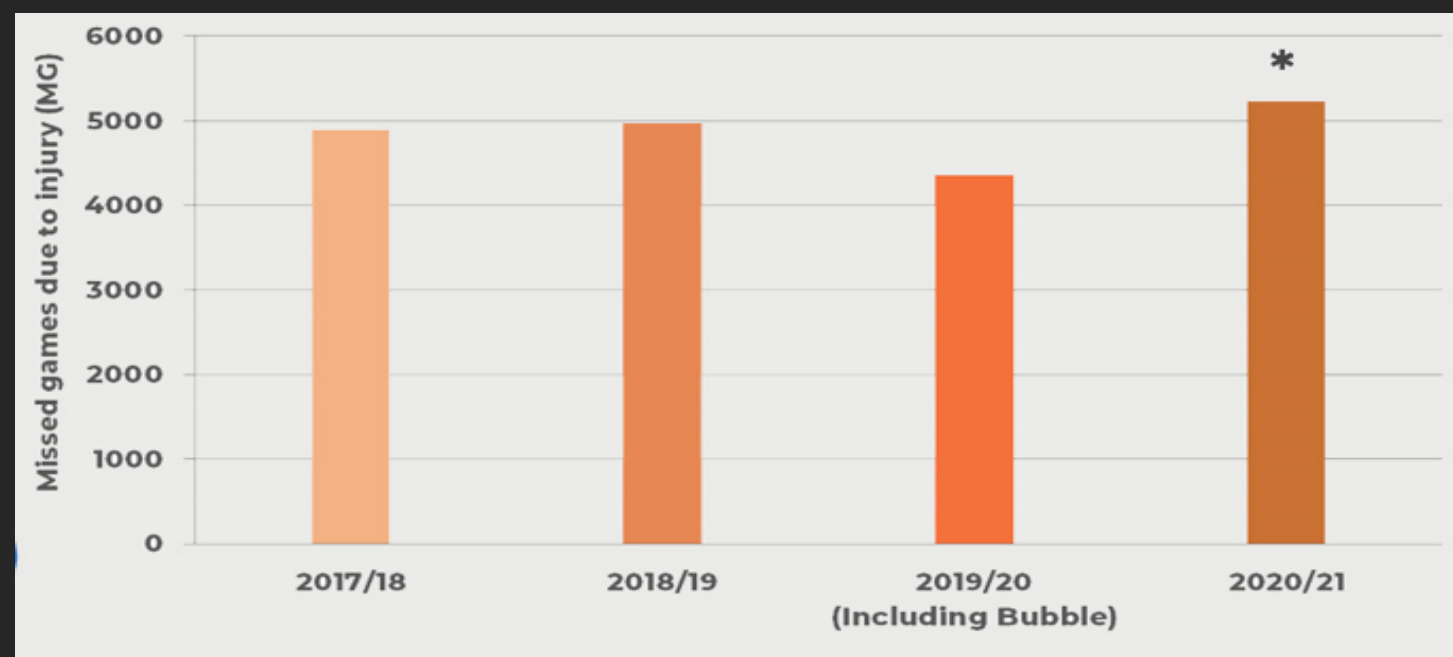Contactless and Preventable

Lower body injuries
66%

Joint-ligament injuries
60%

Lower body disability
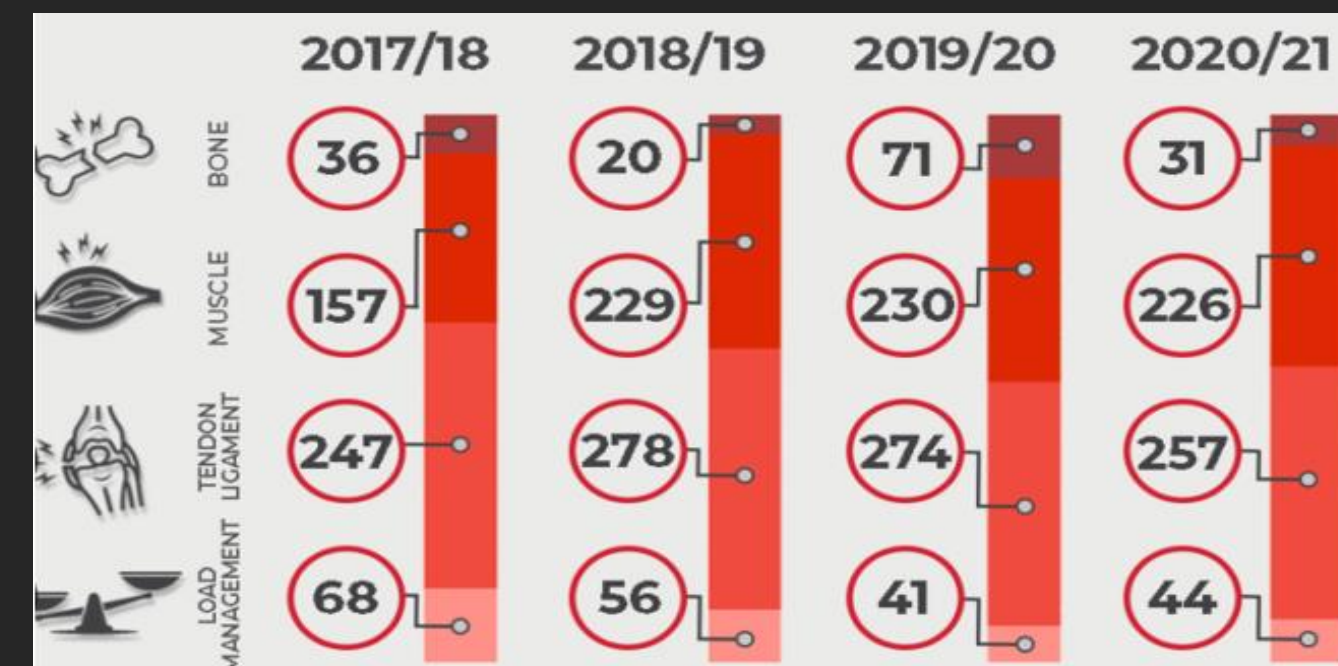**It is the most common type of injury in football.**

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Injuries in basketball are very costly to teams and can be prevented.

Number of days lost due to injury

Types of injuries

Using infrared thermography, muscle and tendon injuries, training loads can be monitored and disability risk can be identified.

Season	Muscle and Tendon Injuries
2017 / 18	79,5 %
2018 / 19	86,8 %
2019 / 20	81,8 %
2020 / 21	87,1 %

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Sources: Sports Medicine, (October - December 2019)Torres-Ronda, L., Gámez, I., Robertson, S., & Fernandez, J. (2022). Epidemiology and injury trends in the National Basketball Association: Pre-and per-COVID-19 (2017–2021). PLoS one, 17(2)

Problem

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Most injuries in volleyball are **due to overuse and occur without contact**; additionally, these are preventable.

in Volleyball

Ankle,
25.9%

Knee,
15.2%

Fingers
10.7%

Lower-Back,
8.9%

are Seen Most Common

All Injuries occur*

With Contact,
23%

Overuse
20.7%

Non-Contact
17.3%

with the aid of thermography, most injuries can be prevented.

The Highest Injury Rate In Volleyball

Center

The Lowest Injury Rate In Volleyball

Libero

The incidence of injuries in volleyball players is **10.7/1,000** hours per match.

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Source: Bere, Tone and Kruczynski, Jacek and Veintimilla, Nad`ege and Hamu, Yuichiro and Bahr, Roald, 2015, 'Injury risk is low among world-class volleyball players: 4-year data from the FIVB Injury Surveillance System', British Association of Sport and Excercise Medicine, 49(17), pp.1132-1137

In athletics, the main reason athletes quit the sport is due to injuries.

In athletics,

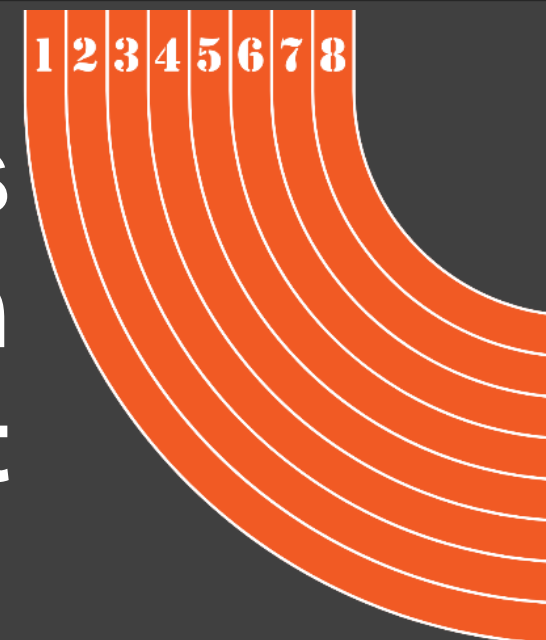Posterior Thigh
28.9%

Ankle,
16.5%

Knee,
12.6%

are Seen Most Common

In athletics,
94% of athletes have been injured at least 1

the Type of Injuries in Athletics
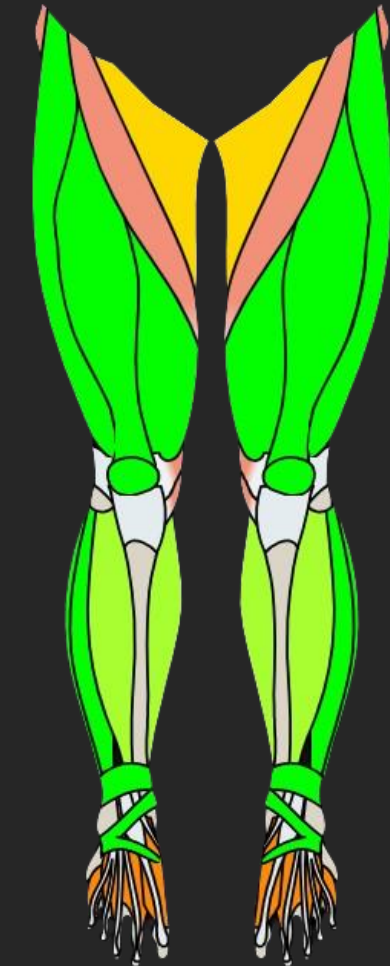
Muscle,
37.7 %

Tendon
17.5%

Joint-Ligament
15.5%

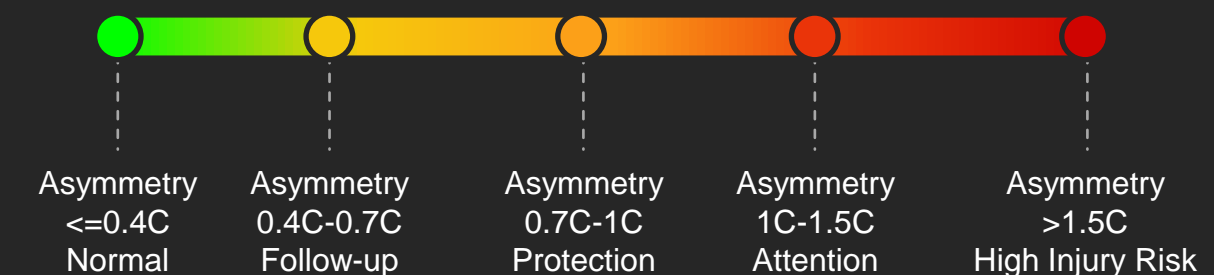Injuries caused by overuse can be prevented with thermography

The leading reason for quitting athletics is injuries, accounting for 46.2%.

Source: Edouard, Pascal and Mosser, Constance and Chapon, Joris and Depiesse, Fr'ed'eric and Palmer, Debbie., 2024, 'Understanding the first injury in athletics and its effect on dropout from sport: an online survey on 544 high-level youth and junior athletics (track and field) athletes', BMJ Specialist Journals, 10(1),

Solution

Using thermal imaging and artificial intelligence, we can detect athlete injuries early, in less than 15 seconds.
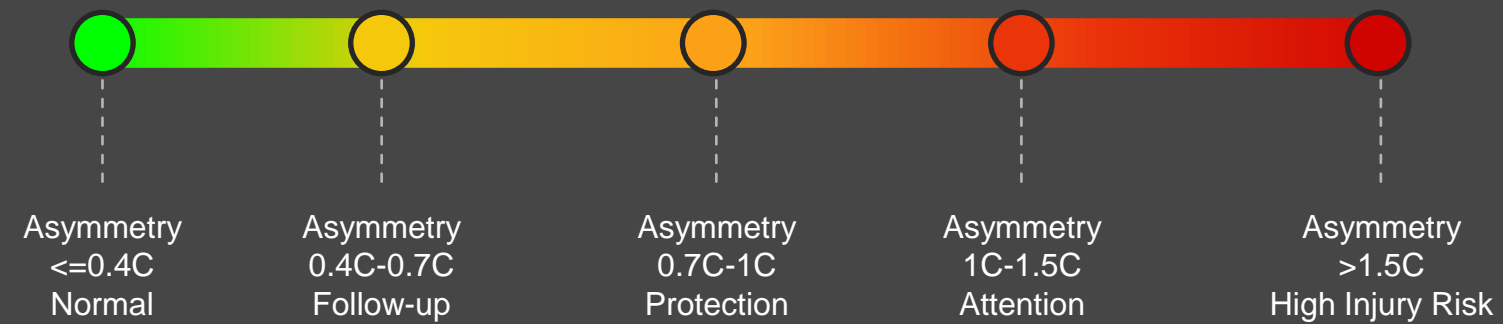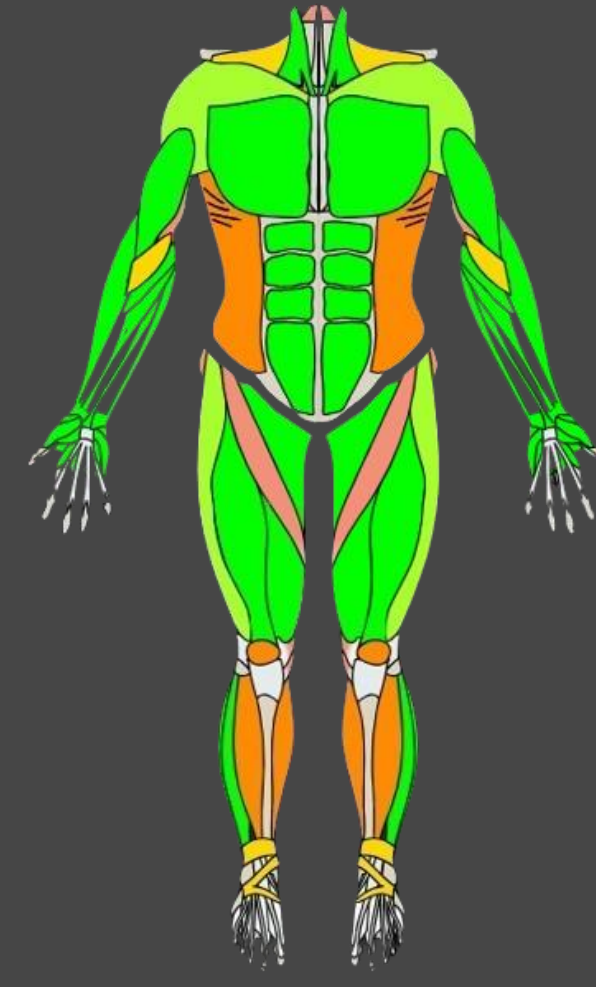

Thermal Analysis Before and After Training

Disability Detection with Asymmetry

Training and Treatment Planning

Shortening Disability Periods

Increasing Athlete Activity

Injury Color Code

Asymmetry <=0.4C Normal	Asymmetry 0.4C-0.7C Follow-up	Asymmetry 0.7C-1C Protection	Asymmetry 1C-1.5C Attention	Asymmetry >1.5C High Injury Risk

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Athlete Evaluation Results
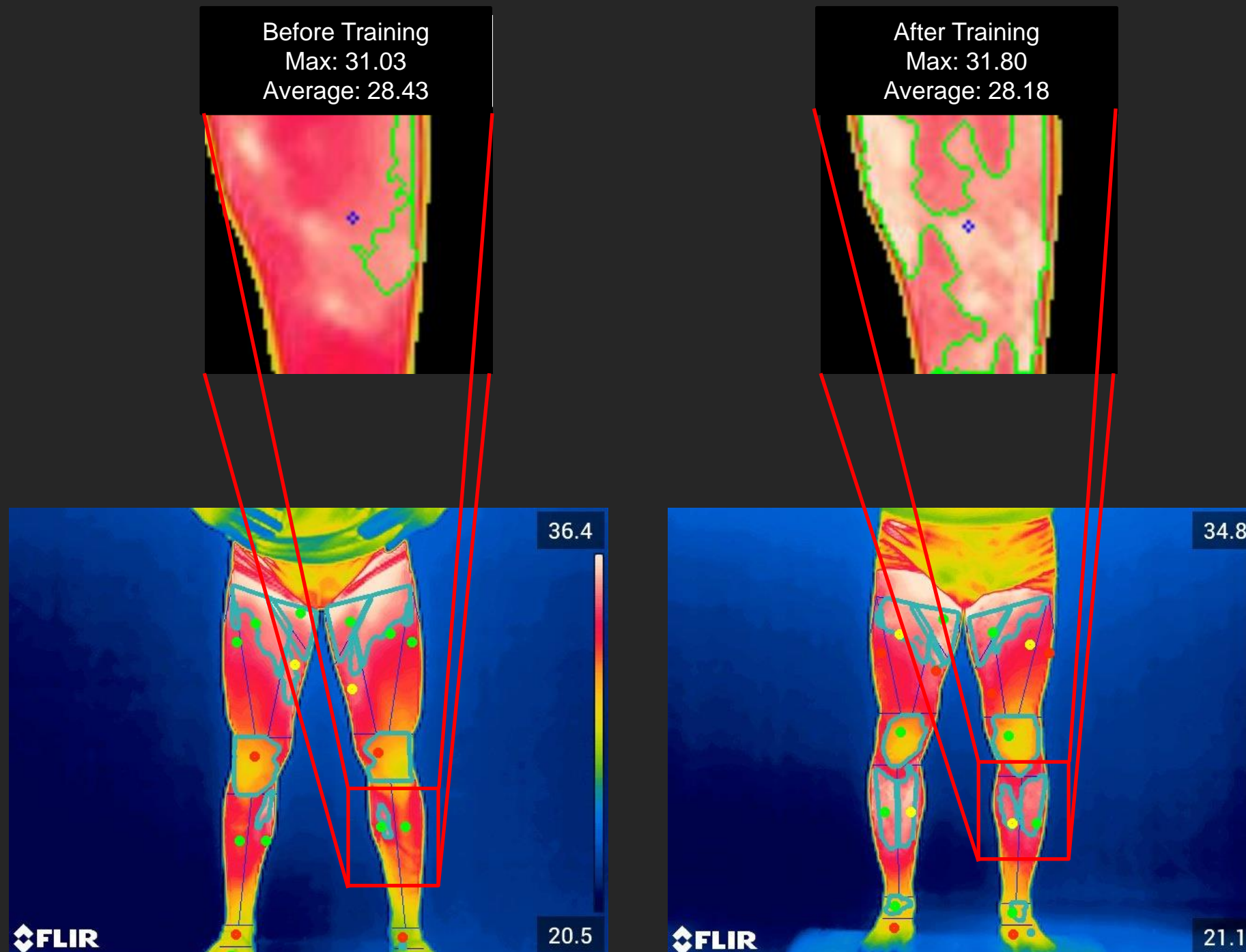

Injury Risk Assessment

Injury Risk Color Code

Asymmetry <=0.4C Normal	Asymmetry 0.4C-0.7C Follow-up	Asymmetry 0.7C-1C Protection	Asymmetry 1C-1.5C Attention	Asymmetry >1.5C High Injury Risk

Fatique Assessment

Fatique Color Code

Asymmetry < % 40 Not Fatique	Asymmetry % 40 - % 60 Low Fatique	Asymmetry % 60 - % 80 Average Faique	Asymmetry > % 80 High Fatique

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Identification of Areas of Inflammation

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Before Training
Max: 31.03
Average: 28.43

After Training
Max: 31.80
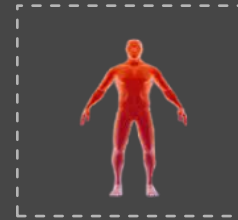Average: 28.18

36.4

20.5

34.8

21.1

- Ai4sports detects areas of inflammation in **40 different muscle groups** using artificial intelligence.

- It introduces a quantitative and objective evaluation technique for the following criteria;
  - Muscle fatigue
  - Athlete recovery time interval

- Ai4sports is a great tool to determine when an injured athlete is ready to start training again.

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Thermal Digital Twin

Digital twins of the athletes whose thermal images are taken during the whole training period are created.

Even before the athlete starts training, the reaction of his/her muscles to the training is detected thanks to the digital twin.
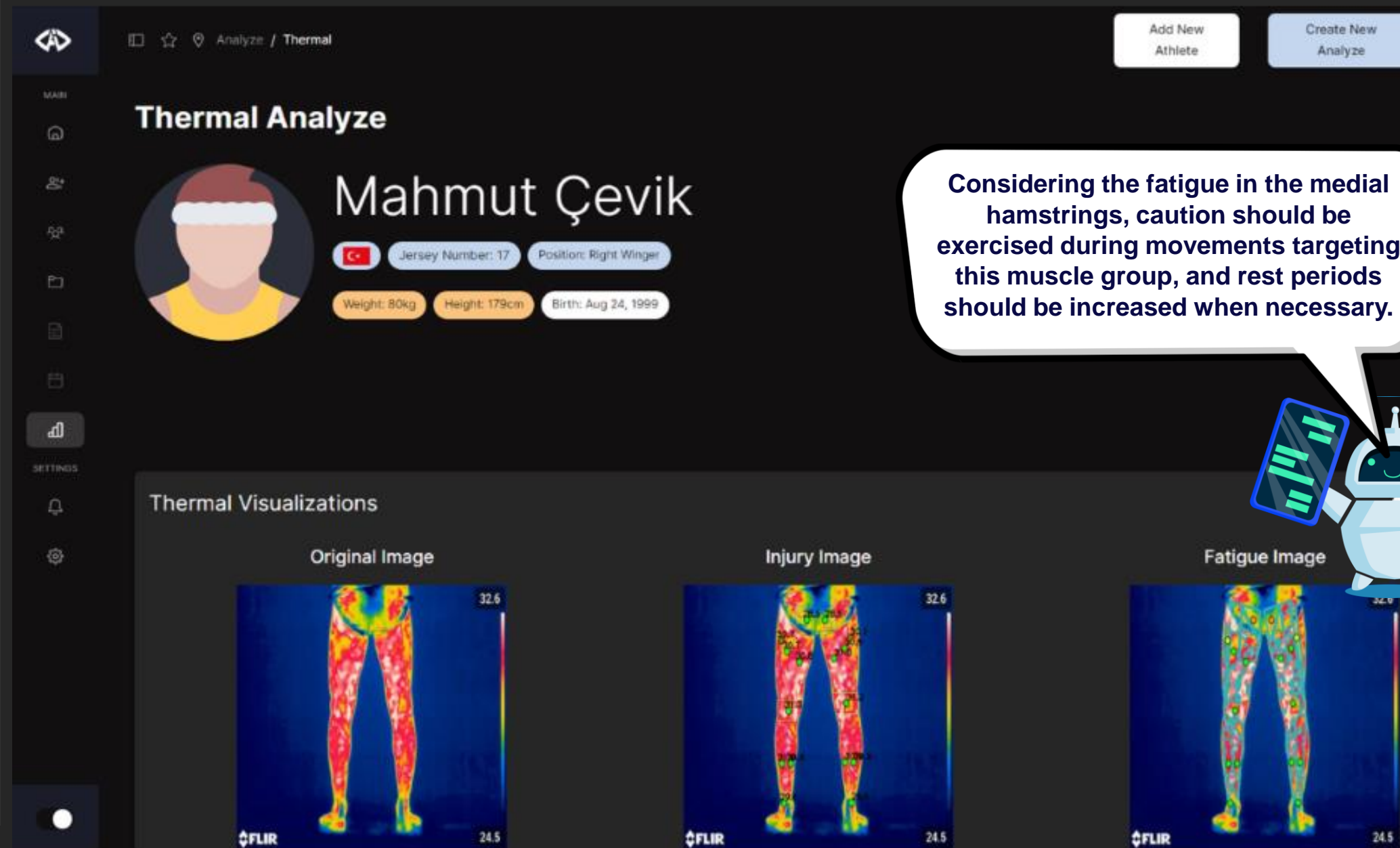
In this way, injury risks that may occur during training are identified in advance and the athlete is protected.

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- **Thermal Analysis and AI Support:** The ai4sportshub platform analyzes athletes' thermal images using our AI system to assess injury and fatigue risks.

- **Data Integration and Correlative Insights:** These regularly monitored data are combined with other measurement metrics, such as GPS, to provide correlative results.

- **Performance and Injury Management:** As a result, teams and sports professionals can monitor athletes' physical condition more accurately and reliably, optimize performance development, and minimize injury risks.

Highlighted Features with ai4sports

- **Thermal Camera:** Utilizes thermal imaging technology to generate athletes' heat maps, offering in-depth insights into factors such as **injury risk and fatigue**.

- **Unlimited Capture and User Analysis:** Provides unlimited thermal captures and analyses for athletes covered under the package.

- **AI-Powered Injury and Fatigue Analyses:** Our AI algorithms process the data to deliver comprehensive information about athletes' health status, fatigue levels, and injury risks.
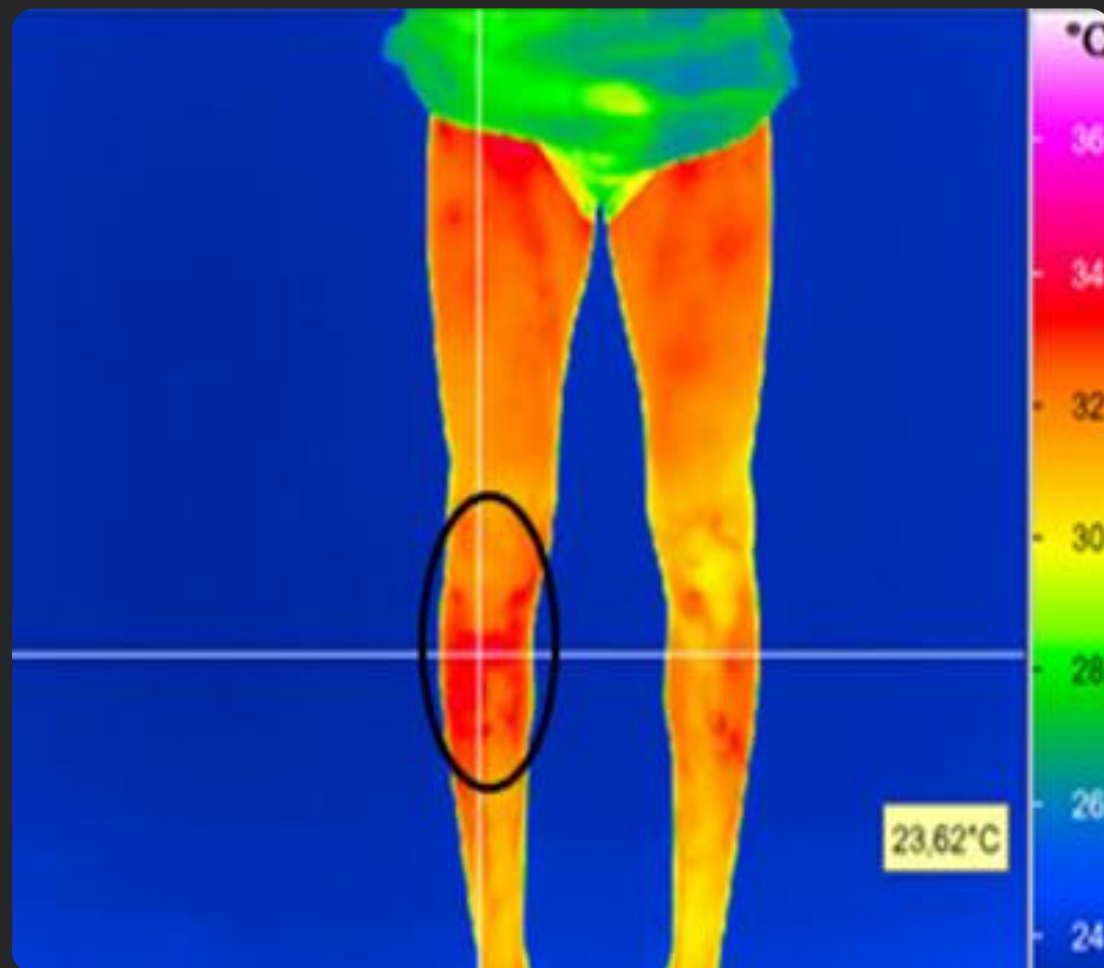
- **ai4sportsGPT:** An advanced AI language model that delivers training and treatment recommendations based on injury and fatigue risk analysis results, as well as personal athlete data (age, weight, height, injury history, type of sport).

- **User-Friendly Interface:** Allows you to grant access to technical or medical teams, ensuring regular and coordinated monitoring of athletes' data.
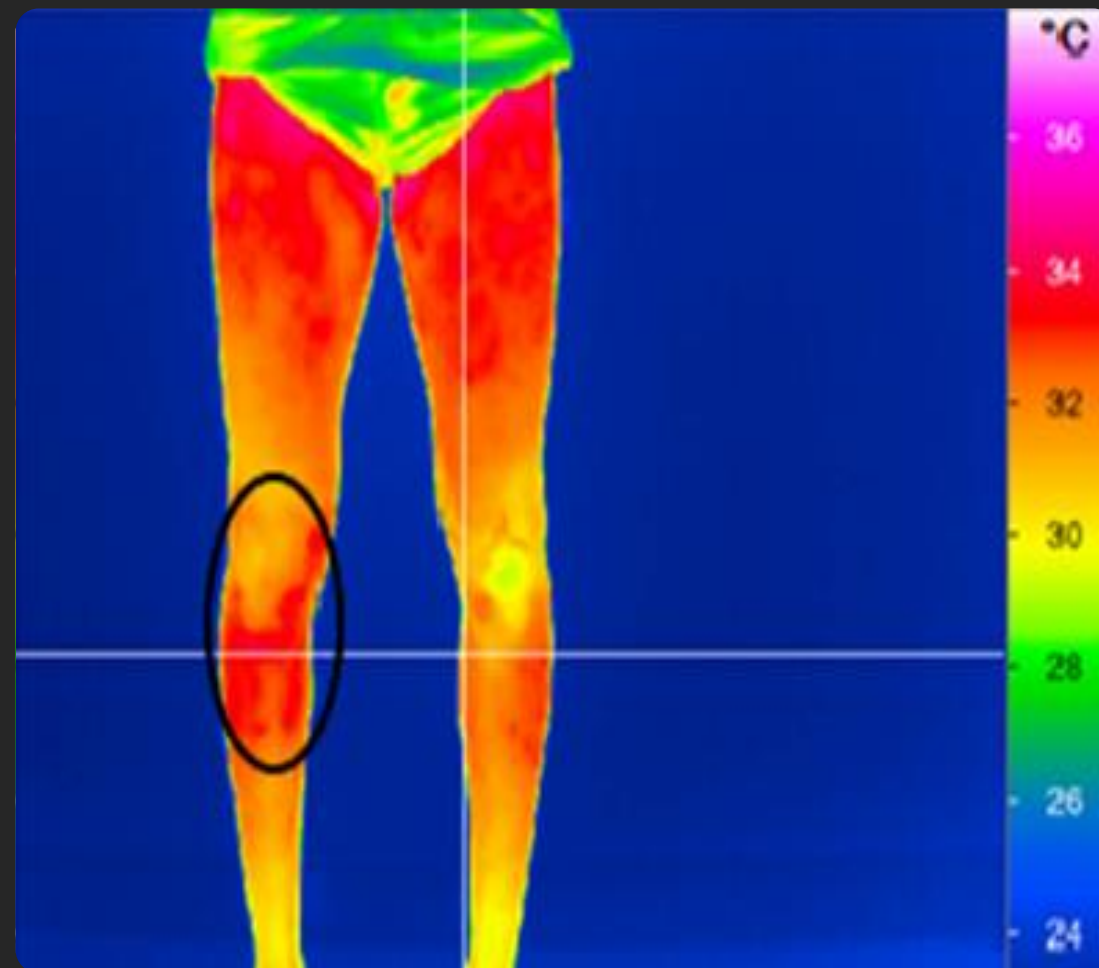
Case Study: Athlete Recovery

Ai4sports is used in the athlete recovery process to identify and optimize when an athlete is ready to return to training.
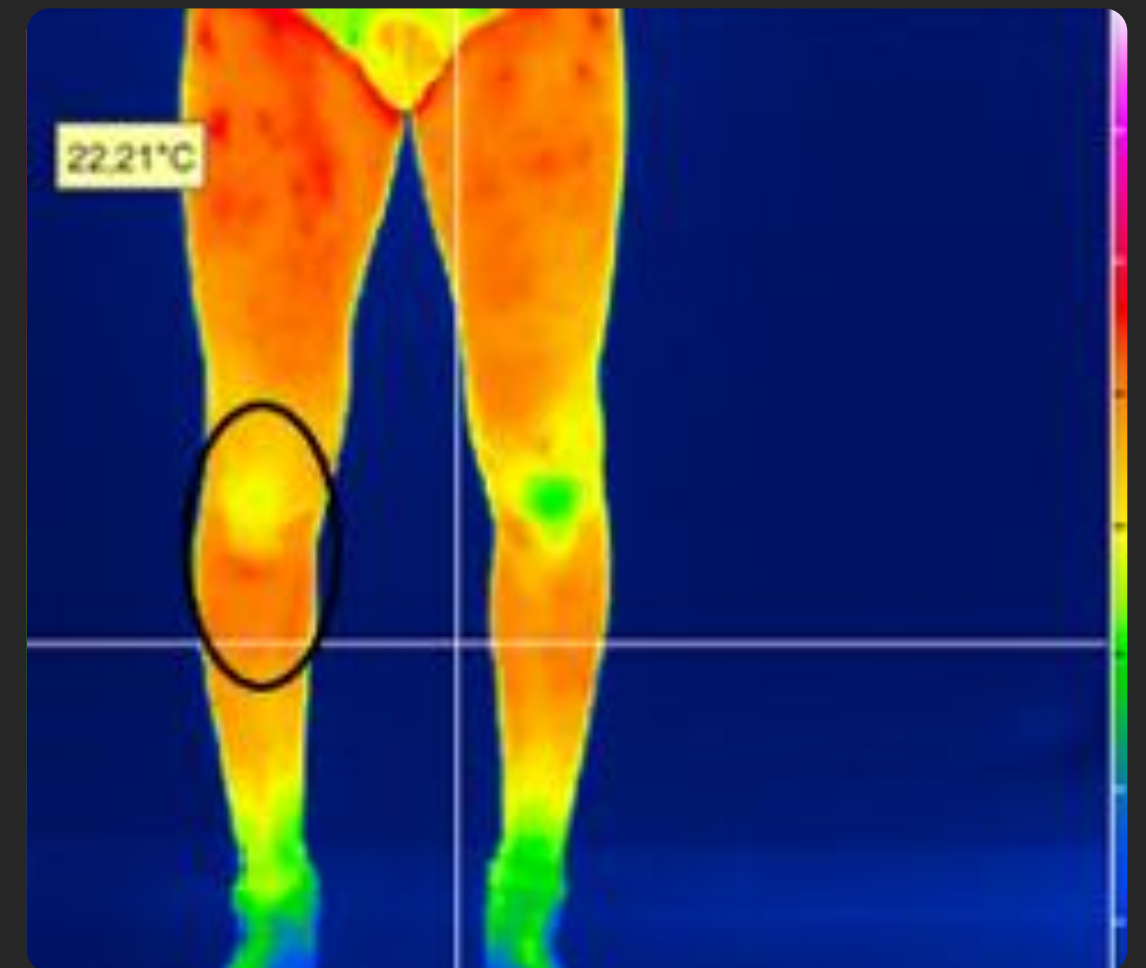
After Total Rupture Anterior Cruciate Ligament Surgery
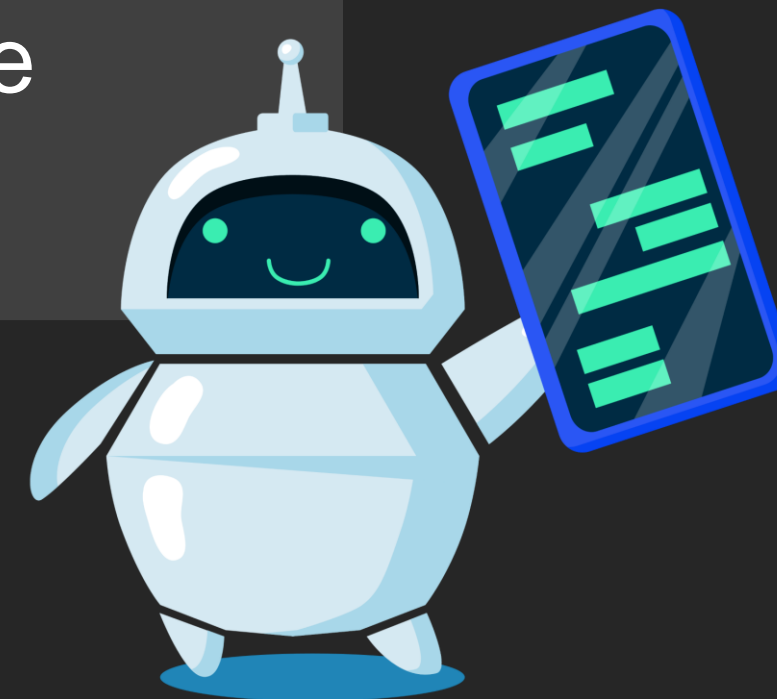

2nd Month

3rd Month

6th Month

Why ai4sports?

- **Effective Solution:** Analyze your athletes' performance in real time with advanced AI technology.

- **User-Friendly:** Easily review all data thanks to a simple, intuitive interface.

- **Flexible Packages:** Flexible payment plans adapted to your user count.

How to Get Started?

- **Starter Package:** Purchase the Starter Package to set up your system and begin analysis for your first 20 users.

- **Additional User Packages:** Add more users whenever needed by acquiring Extra User Packages.

- **Thermal Camera & User Accounts:** Make your training sessions more efficient with a thermal camera and dedicated user accounts.

Offer Packages

Starter Package (ai4sports Basic Package)

Price: 10.000$

Contents:

- 1 Thermal Camera
- Unlimited captures and user analysis for 20 users over 1 year
- User account creation
- AI-powered injury and fatigue reports

Who Is It For?

- An ideal entry-level solution for sports academies, clubs of various sizes, and coaches.
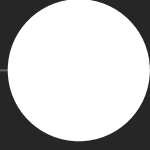- Teams and individual athletes seeking injury and fatigue analysis.

Additional User Packages (to be added to Starter Packages)

- 100 Users: 490$ / Month
- 300 Users: 990$ / Month
- 500 Users: 1490$ / Month
- 1000 Users: 2490$ / Month

Who Is It For?

- **Sports Clubs and Organizations:** Institutions that need advanced injury and fatigue analysis for multiple teams and athletes.

- **Sports Units Across Various Disciplines:** From basketball to soccer, volleyball to tennis organizations seeking performance tracking and risk analysis in a range of sports.

- **Gyms, Physical Therapists, and Personal Trainers:** Professionals looking to optimize training and treatment processes using injury and fatigue risk analyses.

Contact Information

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