



Syllabus. Theoretical statistical knowledge of sport analytics. How should you analyze those KPIS?

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TOPICS

☰ Module 1. Foundational concepts of statistics and Rstudio

☰ Module 2. Exploratory and descriptive analytics in R

☰ Modulo 3. Statistical modelling in R

☰ Module 4. Analytics in R

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Justification

There is a great need for expertise in sports analytics in professional sports. Organisations are now embracing analytics and technology more than ever. Athletes are now more aware of the impact of tracking their health and performance data. Sports analytics is a growing field where sports scientists with the skills provided in this course are strongly desired.

This course is designed to provide a basic understanding of sports analytics. It will provide you with the skills to work in a professional sports organisation. This course begins with an introduction to the science of movement in sports, different types of key performance indicators that have been evidenced to affect performance. You will learn which are the most relevant key performance indicators, how to collect and examine them effectively. Throughout this process of collecting key performance indicators, you will gain experience in how to leverage wearable technology to capture data such as internal and external load. Then a foundation in R and Rstudio, statistical software, will be provided, where you will gain practical experience with basic statistical concepts and predictive analytics. Then, you will learn how to

interpret your findings and translate them into relevant information that players, coaches, and staff can implement to enhance performance.

Objectives

By establishing objectives, we give ourselves a clear idea of what we want to achieve once the teaching and learning process of this course has finished. But our aims are even more specific: we also want to establish what you will need to accomplish in order for this new knowledge to contribute to your educational goals.

To achieve these objectives, you must complete the entire process laid out in the different stages of the course.

Thus, if you work in the way suggested, you will be well-positioned to meet the following objectives:

General objective

The overall objective is to provide the learner with knowledge and understanding of the basic principles of sports analytics. Gaining an understanding of the science of movement, key performance indicators, wearable technology, statistical analysis, and how to use sports analytics to help improve players' and teams' performance.

Specific objectives

- Gain knowledge on the science of movement in sports and learn how to collect data on the physical, physiological, psychological, and environmental key performance indicators in professional sports.
- Learn about the different types of wearable technologies that are used in professional sports to capture internal and external loads and how to validate the wearable technology.
- Be competent in identifying the appropriate statistical models, as well as become proficient in running code in R and Rstudio.
- Be able to present the analytical findings, translate them into meaningful performance insights, and customise the presentation to the relevant key stakeholders, players, coaches, support staff, and front office management.

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Skills

Competently implement sound sports analytics and extract meaningful insights for sports organisations.

- Understand fundamentals of measurement and assessments in sports.
- Develop statistically sound and robust analytic solutions.
- Transform data into actionable insights.
- Examine different sports case studies using programming, analytics, and data visualisation.

Specific skills

By the end of this certificate programme, you will be able to comprehend the science of movement in sports, identify key performance indicators, validate wearable technology, and be knowledgeable regarding the types of wearables that capture

internal and external load. Furthermore, you will understand which statistical models to implement based on a given sport, player position, any given situation. In addition, you will be a proficient R user. Finally, you will be able to interpret and present your data-driven insights in a digestible manner to key stakeholders in professional sports such as professional athletes, support staff, coaches, and front office management.

- Understand the science of movement in sports.
- Have the ability to synthesize the data from the physical, physiological, psychological, and environmental key performance indicators.
- Have the ability to vet wearable technology.
- Have the ability to code in R and Rstudio.
- Have the ability to execute statistical analysis.
- Effectively manage conversations with players, coaches, and front office management.
- Demonstrate a solid understanding and application of sports analytics.

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