



The World of Sports Analytics: Resources, Methods, and Case Studies

Martí Casals

Advances in Sports Analytics

Statistical Methods, Data Science, and Research Practices

Università degli Studi di Brescia, July 2026



INEFC

Institut Nacional
d'Educació Física
de Catalunya
Barcelona



**Generalitat
de Catalunya**

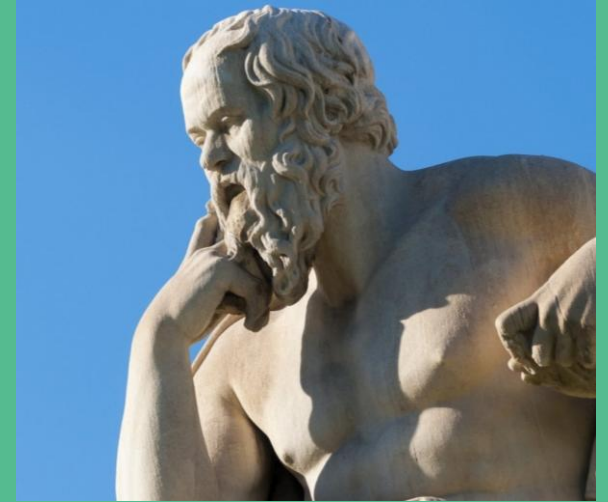
2026



Martí Casals
STATSTHINKING

Outline

1. **My academic and professional point of view**
2. **History of Sports Analytics**
3. **Resources of Sports Analytics**
4. **Case Studies**
5. **Advancing Sports Statistics: Building Networks and Shaping the Future**



1. My academic and professional point of view



“We believe that the **leading thinkers of the next decade will be those who seamlessly knit together tools from both statistics and computing** and that how we think about statistics will be informed by complementary computational thinking”

Nicholas Horton & Johanna S. Hardin



Why I decided to study statistics...

I had also planned to study a sports-related degree



From Public Health Epidemiology to Elite Sport Research



Teaching and current research

inefc

Institut Nacional
d'Educació
Física de Catalunya



Generalitat
de Catalunya



UNIVERSITAT DE VIC
UNIVERSITAT CENTRAL DE CATALUNYA



CEAF
Sport and Physical Activity
Studies Centre
UVic-UCC



Universitat
Oberta
de Catalunya



AQU CATALUNYA



Sports analytics and knowledge transfer



MEMPHIS
GRIZZLIES



BARÇA
INNOVATION HUB
FC BARCELONA



Càtedra d'Anàlisi de Dades
per a un Bàsquet 360°



Scientific and institutional activity



The Journal of Sport
& Exercise Medicine



EDUCACIÓ FÍSICA I ESPORTS



Societat Catalana
d'Estadística



Web of Science™

2. History of Sports Analytics

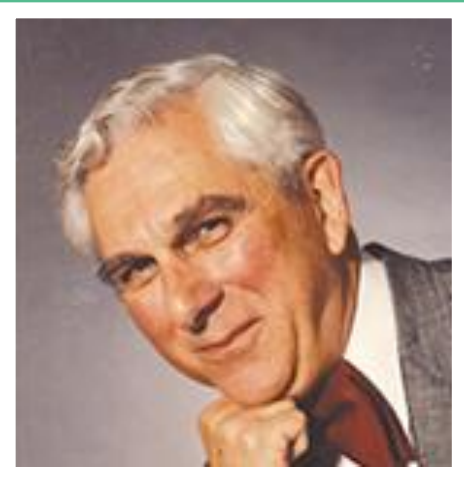


More people are exercising and watching athletes on TV and in stadiums

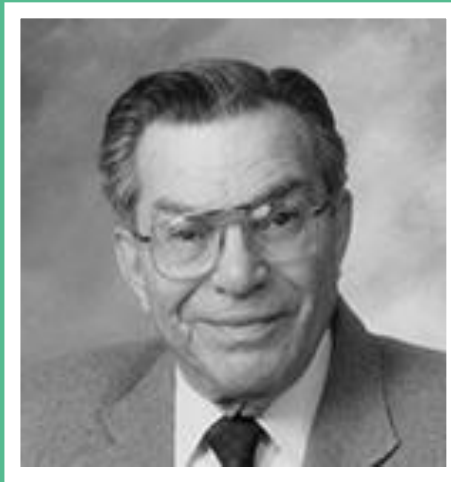


Statisticians in History

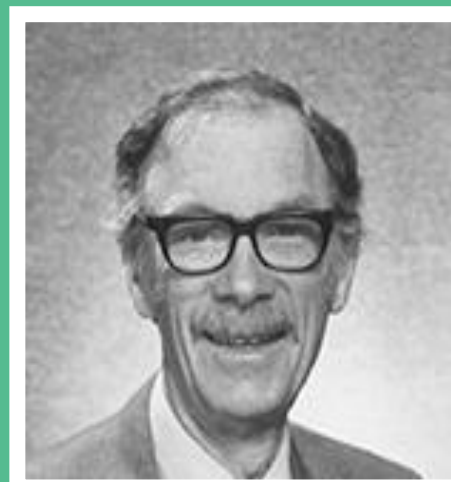
AMSTATNEWS
The Membership Magazine of the American Statistical Association



Richard L.
Anderson
(1915–2003)



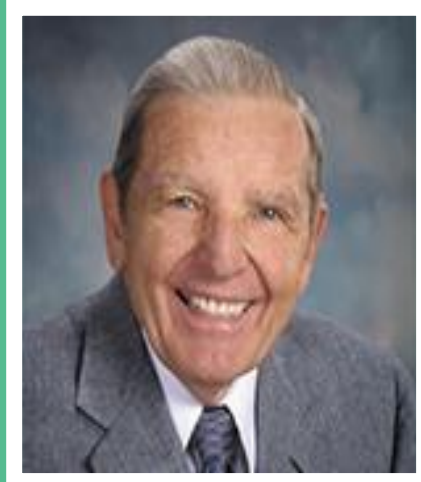
Samuel W.
Greenhouse
(1918–2000)



Monroe Sirken
(1921–2017)

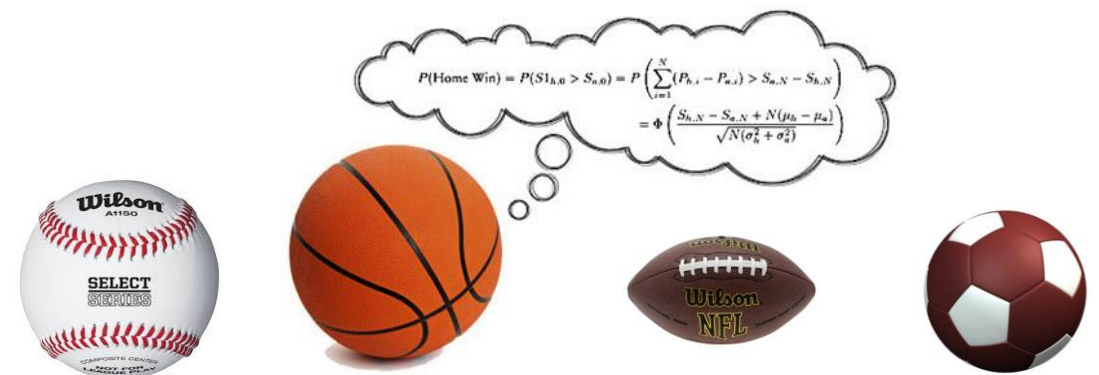


Arnold Zellner
(1927–2010)



Joe Ward
(1926–2011)

History of Sports Analytics. A new trending topic?



MLB – First Full-Time Statistician Hired



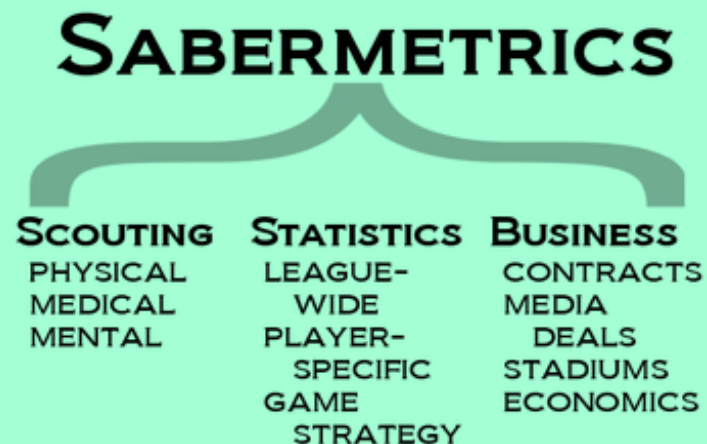
Allan Roth (Montreal, Que.) calculated baseball statistics in his office before computers.

Photo: National Baseball Hall of Fame. 1947

$$f(\text{Sabermetrics}) = \text{statistics} + \text{scouting} + \text{business} + \epsilon$$

In words: Sabermetrics the study of baseball statistics, baseball scouting, baseball business, and anything yet-known or missed by myself (which is the “ ϵ ” epsilon).

More specifically:



Specialisations in the field of statistics and sports statistics

BOX

Statistics and sports science specialisations

SABERMETRICS

Statistics and Baseball

SPORTS ANALYST

Statistics and Sport Science, and Video Analyst and Computer Science

MONEYBALL

Statistics and Sport Science, and Economics and Computer Science

SPORTS BIOSTATISTICIAN

Statistics and Epidemiology, and Public Health | Medicine and Sports Science

Casals M, Finch CF. Sports Biostatisticians – a critical member of all sports science and medicine teams for injury prevention. *Injury Prevention*. DOI: 0.1136/injuryprev-2016-042211



Sports Statistics or Sports Analytics?

Sports Analytics

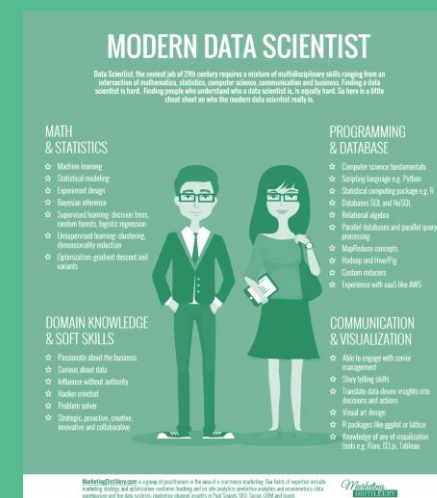
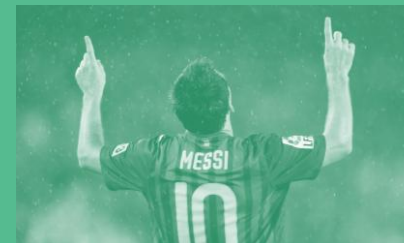
... brings together professionals of the same staff

(physicians, strength and Conditioning (S&C), physiotherapists, analysts, coaches)

... is not individual

... is a multidisciplinary team in sports clubs

where Sport Science, Behavioral Science, Sports Medicine and Data Science & Visualization can all benefit to better using and understanding team sports data.



Who could be interested in statistics applied to sport?

- Sports managers and Decision-makers
- Players
- Journalists
- Bookmakers
- Scouts and video analysts
- Researchers (in other fields)
- Fans
- Mathematicians and Statisticians
- Physiotherapists
- Psychologists
- Sports Scientists and Sports medicine experts
- **Trainers and coaches**
- S&C coaches
- Fitness coaches
- Academics and students



Casals M, Finch CF. Sports Biostatisticians – a critical member of all sports science and medicine teams for injury prevention. *Injury Prevention*. DOI: 0.1136/injuryprev-2016-042211

Sports Industry: Analytics staffs and current oportunities

Charlie Adkins	Coordinator, Football Analytics & Research	Caio Brighenti	Analyst, Football Information	Ryan Herman	Football Research & Strategy
Meredith Manley	Football Analytics Assistant	Michael Pelfrey	Football Analytics Assistant	Ty Siam	Director of Football Data & Innovation
Kevin Jordan	Football Analytics Assistant	Mike Halbach	Director of Football Technology	Courtney Kennedy	Football Data Analyst
John Taormina	Manager of Football Analytics	Jack Prominski	Football Analytics Manager	Brian Shields	Senior Manager, Football Scouting Research Analytics
Emily Badis	Salary Cap and Contract Analyst	Dawson Friedland	Football Data Analyst	Jason Feldman	Coordinator, Football Analytics
Danny Leskin	Football Analyst	Weller Ross	Assistant Director of Football Information Systems for Analytics	Zach Stuart	Coordinator, Football Analytics
David McDonald	Director of Research & Development	Curtis Goodwin	Sports Performance Data Scientist	Alec Halaby	Vice President of Football Operations and Strategy
Scott Cohen	Director of Football Research	Kevin Clark	Football Data and Applications Engineer	James Gilman	Assistant Director of Analytics
Corey Krawiec	Manager, Player Evaluations & Analytics	George Li	Senior Football Strategy Analyst/Game Management	Chase Perlen	Assistant Director of Analytics
Sarah Mallepalle	Player Personnel Analyst	John Park	Manager of Football Research & Strategy	Jon Liu	Football Operations Analyst
Derrick Yam	Quantitative Analyst	Tony Khan	Chief Football Strategy Officer	Tosin Kazeem	Football Analyst
Daniel Stern	Football Analyst	Karim Kassam	Senior Vice President of Football Operations and Strategy	Jay Whitmire	Football Analyst
Dennis Lock	Director of Football Research and Strategy	Eugene Shen	Vice President of Football Analytics	Brian Hampton	Vice President of Football Administration
Luis Guilamo	Director of Analytics & Application Development	Arri Landsman-Roos	Vice President of Decision Science	Demetrius Washington	Manager, Football R&D
Shuler Cotton	Data Analyst	Momin Ghaffar	Director of Strategic Research & Development	Matt Ploenzke	Football R&D Analyst
Evan Weiss	Football Analyst	Victor Li	Quantitative Research Manager	Patrick Ward	Director of Research and Development
Taylor Rajack	Director of Football Analytics	Sam Burgess	Data Analyst	Brian Eayrs	Research Analyst
Bennie Contrino	Assistant - Football Analytics	Zach Beistline	Football Database Analyst	Josh Smith	Database Architect/Application Developer
Brad Goldsberry	Director of Football Analytics/Research	Brandt Tilis	Director of Football Administration	Jacqueline Davidson	Director of Football Research
Sam Francis	Football Data Analyst	Michael Frazier	Statistical Analysis Coordinator	N/A	
Paul DePodesta	Chief Strategy Officer	David Christoff	Director of Football Analytics	Douglas Drewry	Football Research Analyst
Kwesi Adofo-Mensah	Vice President, Football Operations	Walter King	Football R&D		
Ken Kovash	Vice President, Player Personnel Process & Development	Aditya Krishnan	Director of Football Research & Analytics		
Andrew Healy	Vice President, Research & Strategy	Ryan Garlisch	Manager, Software Development		
Dave Giuliani	Director, Research & Strategy	Jake Temme	Manager, Data and Analytics		
Nate Sterken	Lead Data Scientist	Sarah Bailey	Manager, Data and Analytics		
Sam Schmall	Football Research Analyst	Max Mulitz	Manager, Coaching Analytics		
Tom Robinson	Director of Football Research	Harrison Freid	Football Research Assistant		
Adam Vonder Haar	Football Research Analyst	Scott Kuhn	Director, Analytics/Pro Scout		
Alok Pattani	Football Research Consultant	Rex Johnson	Manager, Analytics		
Tony Lazzaro	Senior Director, Football Technology and Research	David Blando	Football Data Analyst		
Scott Flaska	Senior Manager, Football Analytics	Chris French	Football Analyst		
Emily Kuehler	Data Scientist	Richard Miller	Director of Research		
		Soumya Kambhampati	Data Scientist		
		Dylan Murphy	Basketball Operations Analyst		
		Anna Zhao	Data Scientist/Developer		

@SethWalder, ESPN

@SethPartnow

Europe and “il calcio” Analytics?

Soccer Analytics is hard

22 players on the field

Limited Player substitutions

→ 38 games per season

Free flowing action

Large spaces and deep tactical development

Teammate interactions and responsibilities

Goals are rare

But it's not impossible...

Source: Dan Cervone

Premier League Analytics Staff by Club



Sarah Rudd-VP of Software/Analytics
Mikhail Zhilkin-Data Scientist
Susana Ferreras-Data Scientist
Tolly Coburn-Analytics Strategy and Application
Arjav Trivedi-Data Scientist/Engineer



Ian Graham-Director of Research
William Spearman-Lead Data Scientist
Tim Waskett-Software Developer/Statistical Researcher
Dafydd Steele-Statistical Researcher
Mark Stevenson-Software Engineer



Ben Smith-Head of Research and Innovation
Daniel Pelchen-Lead Recruitment/Data Analyst
Federico B.-Data Scientist
Thomas Jackson-Senior Data Analyst
Chris Searle-Data Scientist
Malcom Harkness-Data Scientist
Matt Hallam-Advanced Data Recruitment Analyst



Brian Prestidge-Director of Insights and Decision Technology
Ravi Mistry-Football Intelligence Officer
Edd Webster-Data & Insight Analyst



Bobby Shojai-Player Recruitment Analyst



Lee Fraser-Director of Global Scouting & Data Processes



Luca Guerra-Data Analyst
Charlie Reeves-Data Analyst
Joe Ferrelly-Data Analyst



Alex Kleyn-Lead Data Scientist
Peter Morris-Data Analyst

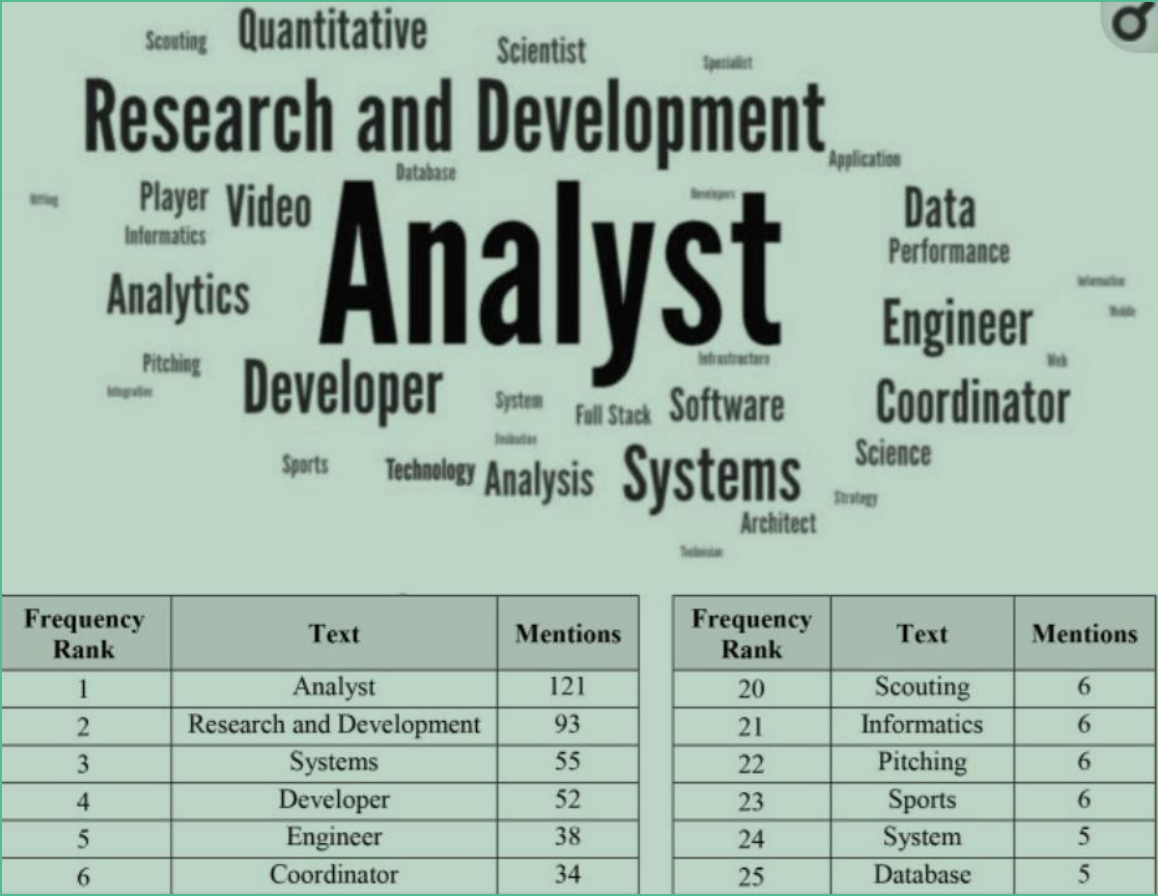


Mladen Sormaz-Head of Football Analytics

Sports Industry: Analytics staff



Houston Astros	Philadelphia Phillies
Research and Development Director (1)	Strategic Initiatives Director (1)
Research and Development Program Manager (1)	Senior Quantitative Analyst (1)
Research and Development Manager (1)	Principal Engineer (1)
Advance information Director (1)	Lead Quantitative Analyst, Player Evaluation (1)
Player Evaluation & Economics (1)	Lead Quantitative Analyst, Amateur Scouting (1)
Major League Video and Technologies (1)	Lead Software Engineer, Application Development (1)
Baseball Technology Manager (1)	Lead Software Engineer, Infrastructure (1)
Senior Research Scientist (1)	Quantitative Analyst (3)
Senior Analyst (1)	Software Engineer (4)
Senior Architect (1)	Director, Integrative Baseball Performance (1)
Senior Developer (1)	Coordinator, Integrative Baseball Performance (1)
Front End Engineer (1)	Assistant, Integrative Baseball Performance (1)
Full Stack Developer (2)	Lead Quantitative Analyst, Integrative Baseball Performance (1)
Data Modeler (1)	
Machine Learning Engineer (1)	
Player Evaluation Senior Director (1)	
Player Evaluation Director (1)	



Foster, G., Naidu, Z., & O'Reilly, N. (2021). Playing-Side Analytics in Team Sports: Multiple Directions, Opportunities, and Challenges. *Frontiers in Sports and Active Living*, 3, 173.

<Johann Windt 2022>



From Observation to Information

Observation



Report ideas



Report information



“Intelligence is the ability to adapt to change.”

Stephen Hawking

Scientific grapevine: asking and questioning approaches

- **Applied Statistical Analysis needs to keep improving! Extremes are never good. But we have to know what we want and know the strengths and weaknesses, or what each approach brings you!**

Martí Casals

- Small Data or Moderate Data or Big Data
- Quantitative or Qualitative research
- Experimental or Observational studies
- Exploratory or Confirmatory studies
- Data scientist or Statistician
- Bayesian or frequentist principle
- Statistical models or Machine Learning or Deep Learning
- CI or effect size or p-value or MBI
- Description or Inference or Causal Inference
- Precision or Protocolized Medicine or Constant effect
- Absolute and Relative measures
- Risk or prognostic factors
- Etiology or Prediction
- Reproducibility and Replicability
- Reliability or Validity

Community of sports statistics

Academia and Research

Scientific journals and special issues on Sports Statistics

Outreach

Conferences and webinars

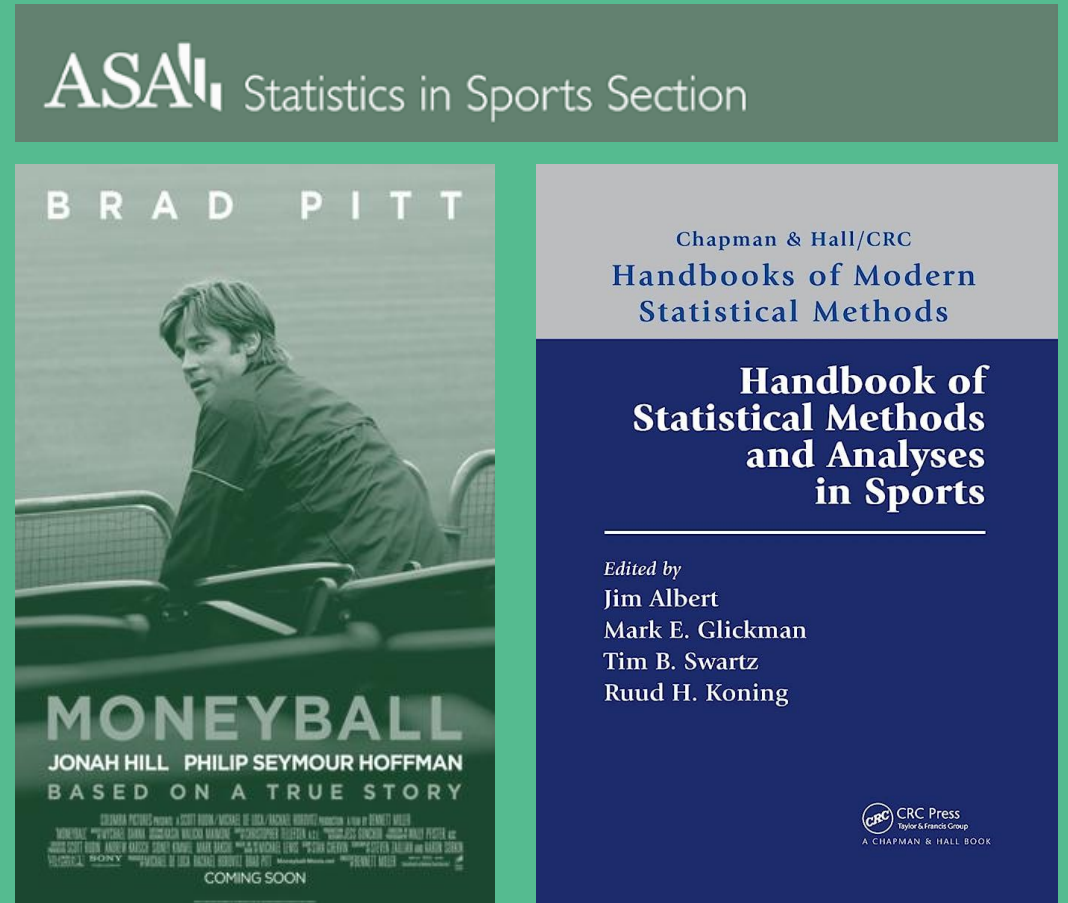
Education

Syracuse University: First bachelor's degree in Sports Analytics

SCORE (Sports Content for Outreach, Research, and Education)

Industry

Specialized consultancies



Networks of sports statistics

ISI Sports Statistics



BDsports Group (Italy)



SCORE Network for Statistical Education in Sports



Statistics In Sports Research Group (Sri Lanka)



Department of Statistics
UNIVERSITY OF SRI JAYEWARDENEPURA

Carnegie Mellon Sports Analytics

Carnegie Mellon University
Statistics & Data Science

Sports Analytics Group at Berkeley

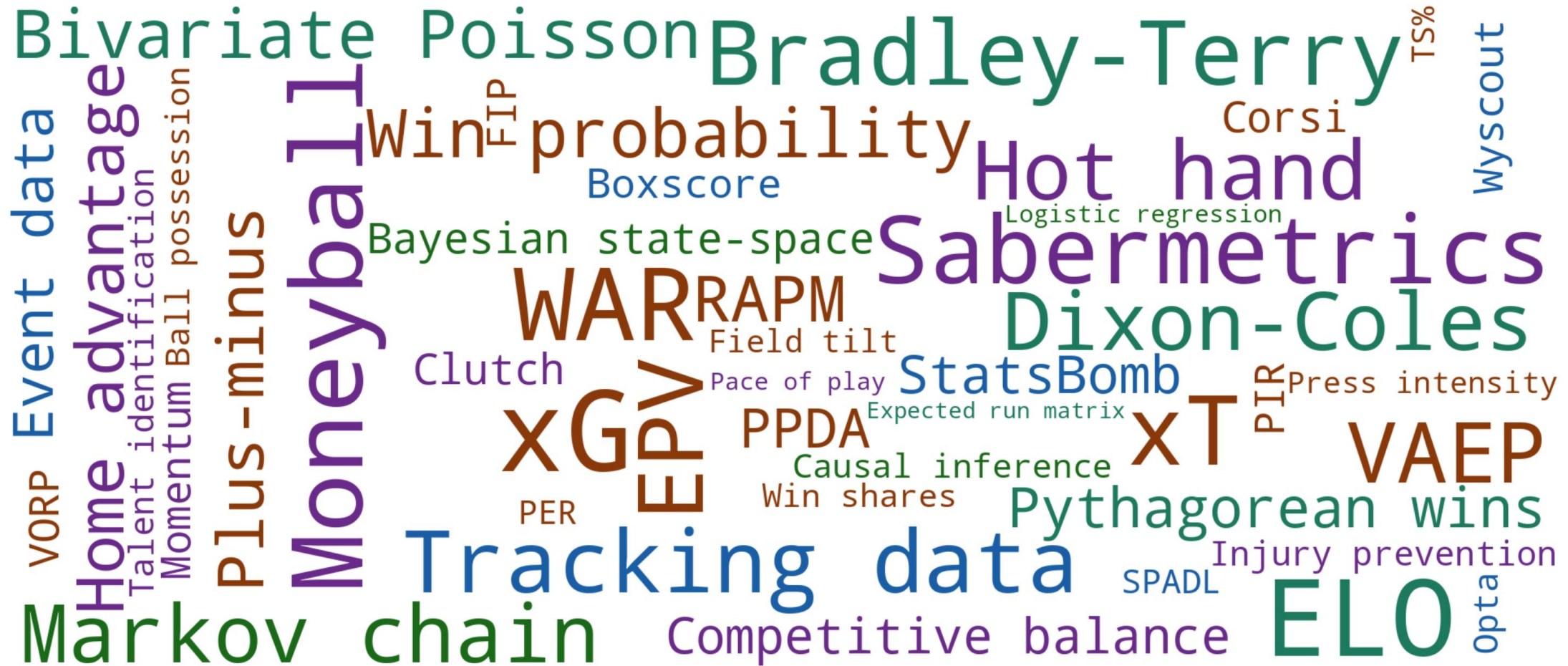


COST ACTION or/and Census????

Glossary and C Speak in Sports Analytics

- **Ratios and some metrics** have blind spots (e.g: odds, Home runs, Batting average, corsi, expected goals (xG), expected threat (xT), Valuing On-the-Ball Actions (VAEP) ...)
- **“Larking” factors** (e.g: Team strength, playing at home, rest, body clock, travel, Injuries, Pace, Weather, Arena/Playing Surface, Referees,..)
- **Myths or reality?** (e.g: Momentum, Hot hand, Team chemistry , Serve First, New Balls, Winning mood, Big points,...)
- **Statistical models** (e.g: Markov-switching models and Bayesian Learning, ordered Bradley–Terry model, ELO-type rating models , Null’s nested Dirichlet, Bivariate Poisson models,...)

The vocabulary of Sports Analytics



■ Models & ratings
 ■ Data & technology
 ■ Performance metrics
 ■ Concepts
 ■ Statistical methods

Guide to Sports Analytics

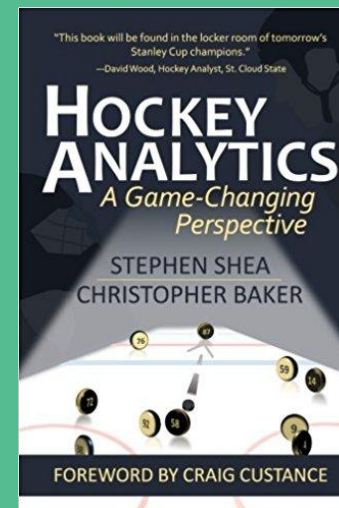
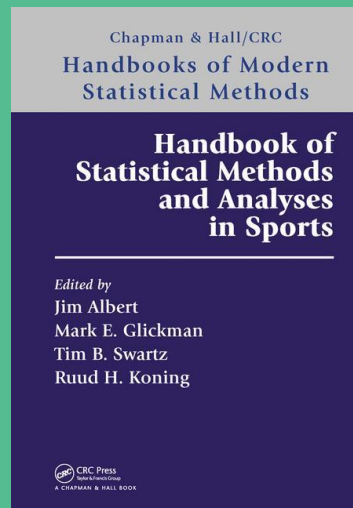
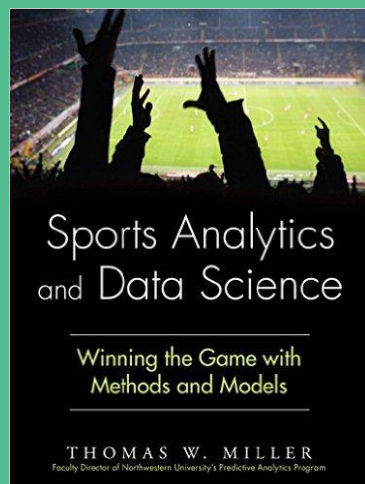
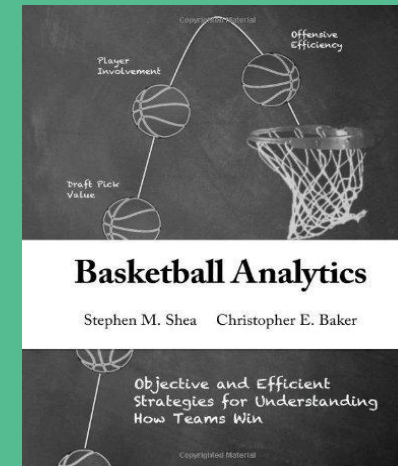
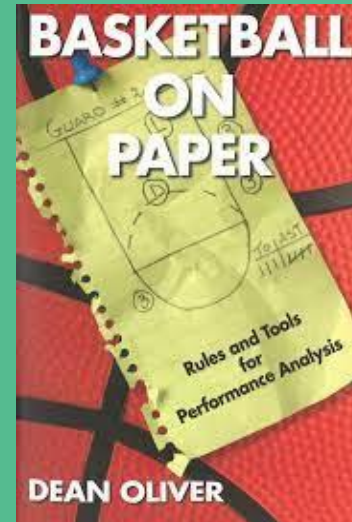
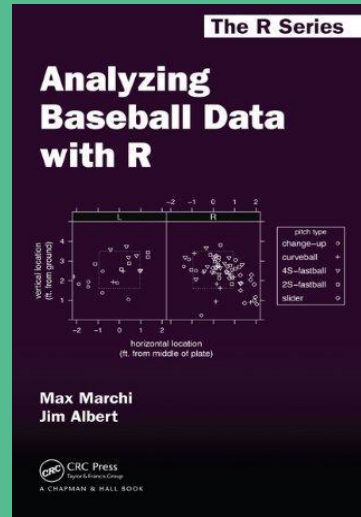
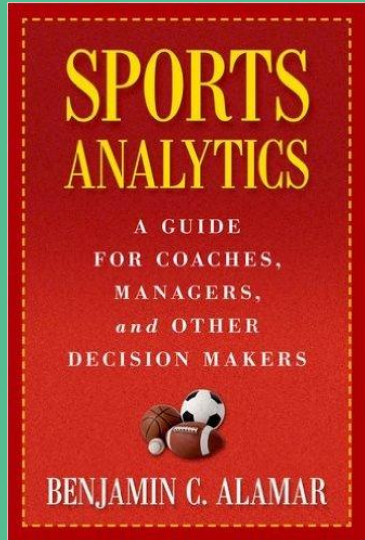
In addition to 200+ R resources, new sports-focused Python links are now included! Over 100+ python tutorials, 30+ packages, 25+ accounts to follow, 10 cheatsheets, and several free books & blogs now all in one place !

Source: [@DSamangy](#)

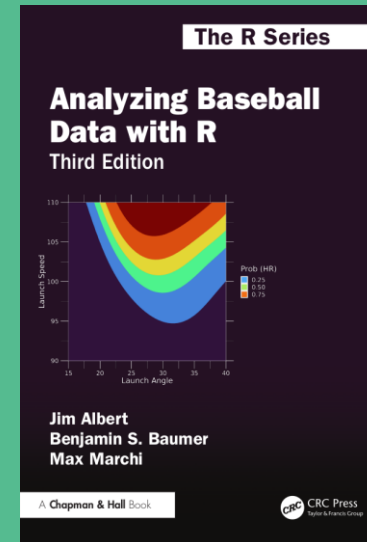
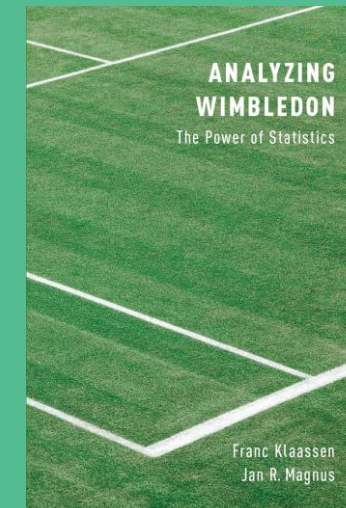
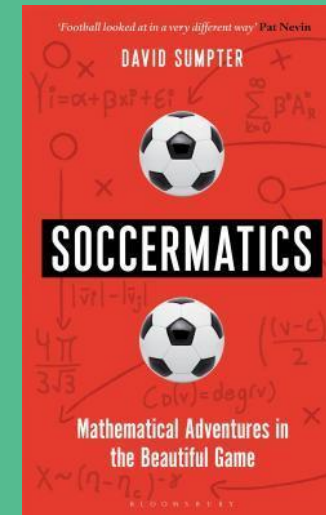
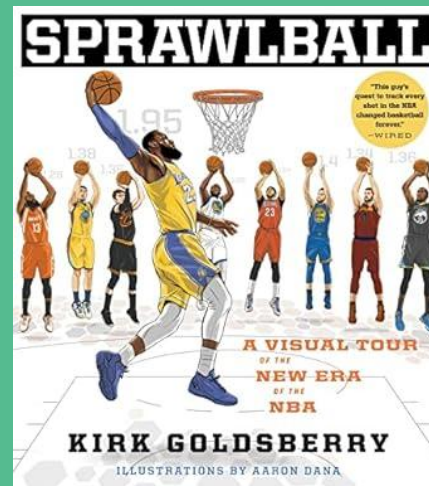
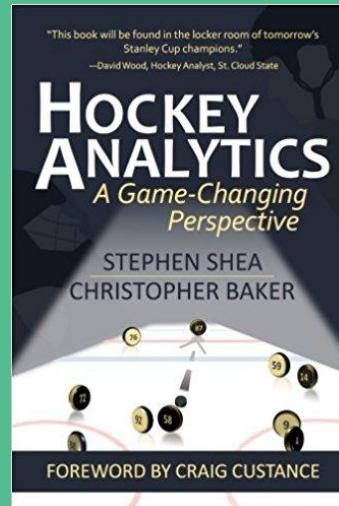
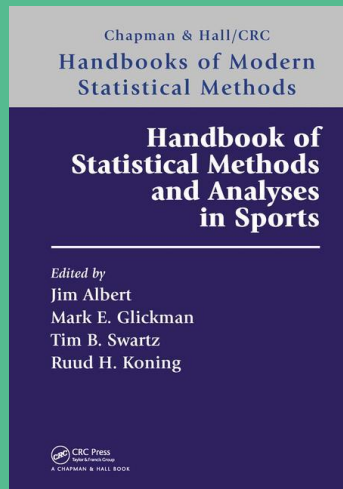
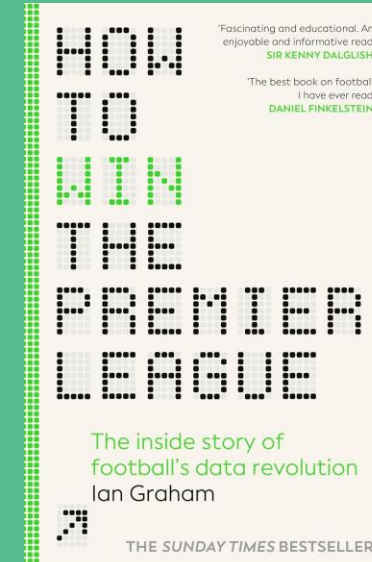
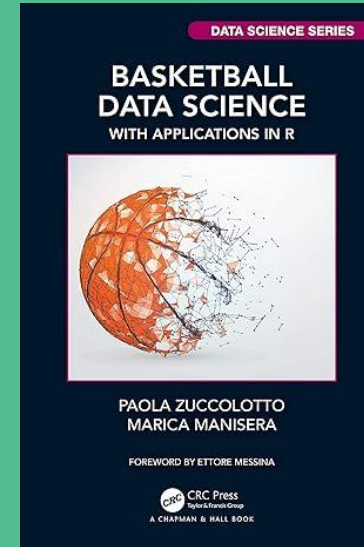
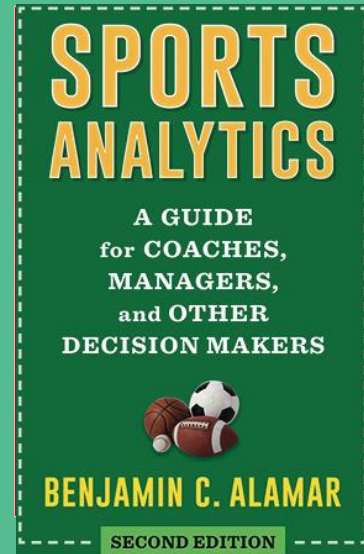
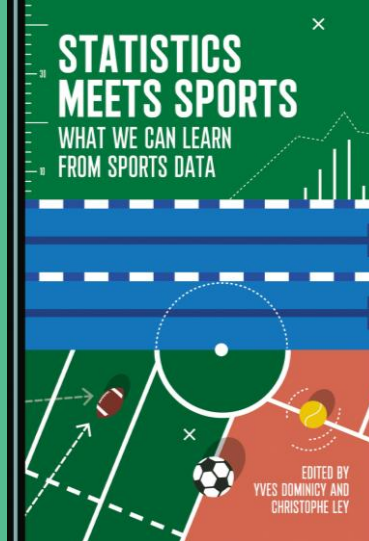
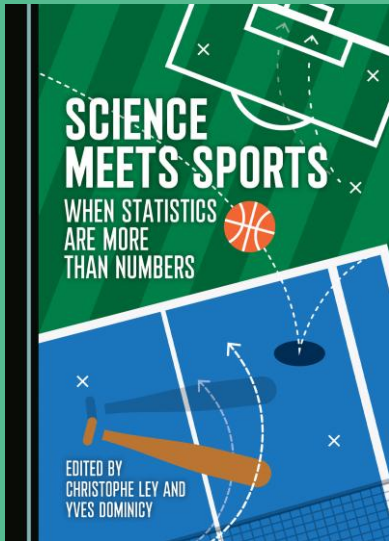
Blogger // Resource	Description	Link	Type
Ben Alamar	Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers	https://www.amazon.com/gp/produ	Book
Wayne L. Winston	Mathletics: How Gamblers, Managers, and Sports Enthusiasts Use Mathematics in Base	https://www.amazon.com/dp/06911	Book
Tobias Moskowitz & Lon Wertheim	Scorecasting: The Hidden Influences Behind How Sports Are Played and Games Are W	https://www.amazon.com/Scorecas	Book
Dean Oliver	Basketball on Paper: Rules and Tools for Performance Analysis	https://www.amazon.com/Basketba	Book
Seth Partnow	The Midrange Theory	https://www.amazon.com/Midrange	Book
Kirk Goldsberry	Sprawlball: A Visual Tour of the New Era of the NBA	https://www.amazon.com/SprawlBa	Book
Ben Taylor	Thinking Basketball	https://www.amazon.com/Thinking-	Book
Stephen Shea & Christopher Baker	Basketball Analytics: Objective and Efficient Strategies for Understanding How Teams W	https://www.amazon.com/Basketba	Book
Stephen Shea	Basketball Analytics: Spatial Tracking	https://www.amazon.com/Basketba	Book
David Sumpter	Soccermatics: Mathematical Adventures in the Beautiful Game Pro-Edition	https://www.amazon.co.uk/Soccer	Book
Christoph Biermann	Football Hackers: The Science and Art of a Data Revolution	https://www.amazon.com/Football-I	Book
Chris Anderson	The Numbers Game: Why Everything You Know About Soccer Is Wrong	https://www.amazon.com/Numbers	Book
James Tippet	The Expected Goals Philosophy: A Game-Changing Way of Analysing Football	https://www.amazon.com/Expected	Book
on Kuper	Soccermatics	https://www.amazon.com/Soccerm	Book

<https://docs.google.com/spreadsheets/u/0/d/1LPe8xYduoep9qCrNzBGdJHaHZ8dnmdHNnu7UXZKzawU/htmlview#>

Sports Statistics literature

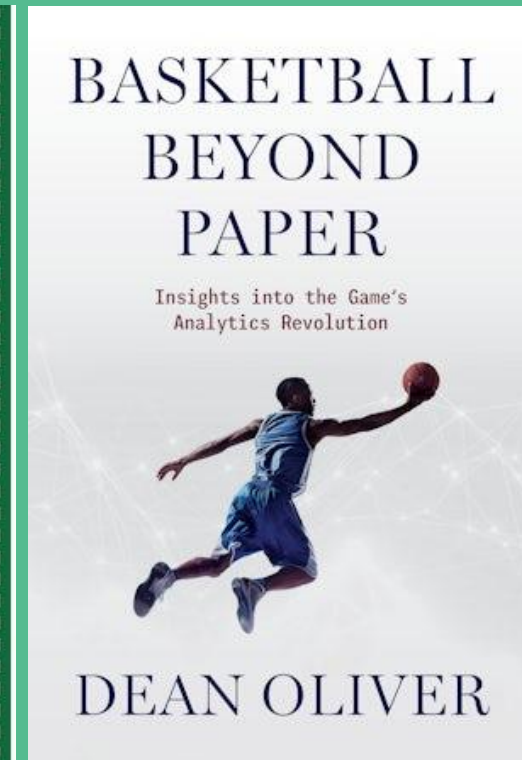
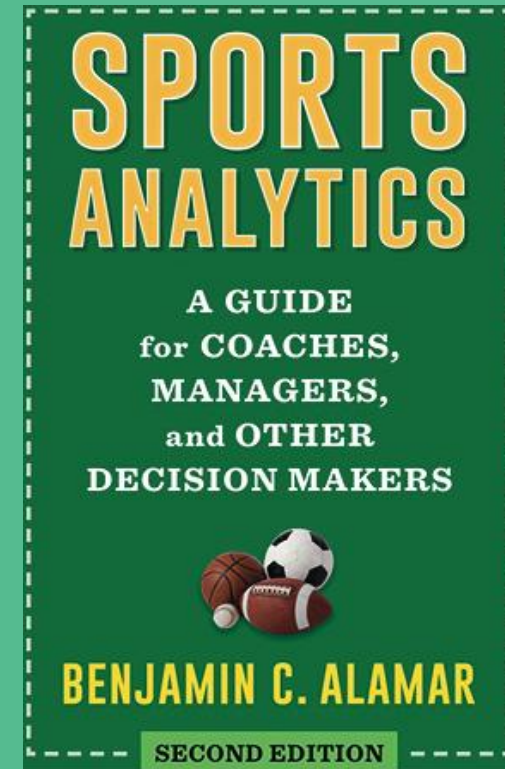


Sports Statistics literature

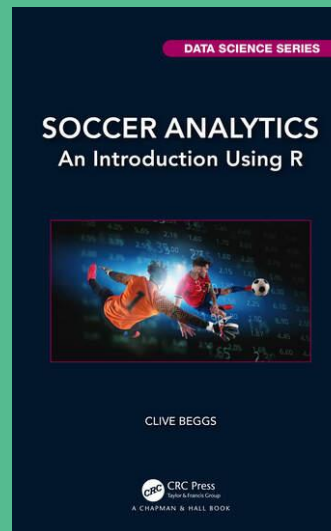
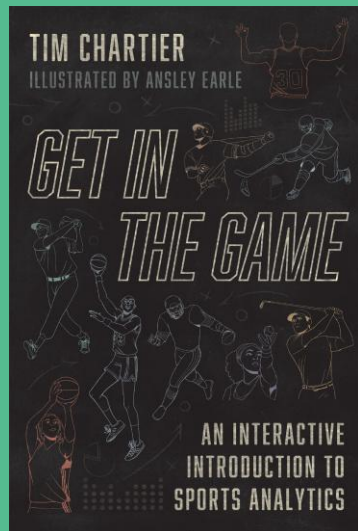
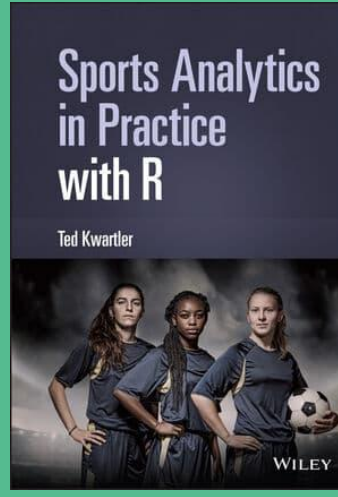
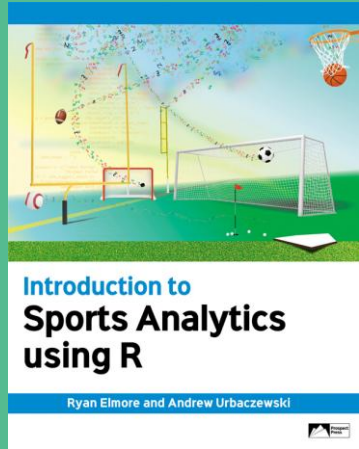


Future of Sports (and Basketball) Analytics?

- 53% use statistical analysis regularly in decision making.
- Only 32% report data are presented clearly and consistently.
- 83% expect their analytics teams to grow in the next five years.
- Improving data management and integration is crucial.
- Decision-making processes need to better utilize available data.



Sports Statistics lit



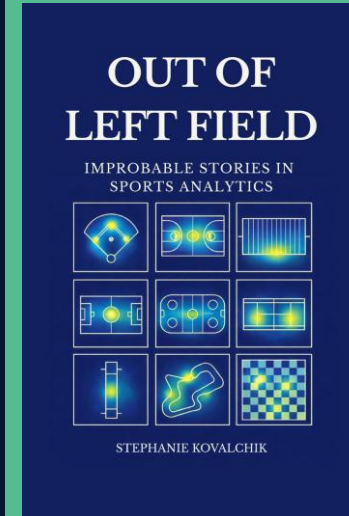
ADVANCED BASKETBALL DATA SCIENCE WITH APPLICATIONS IN R



PAOLA ZUCCOLOTTO
MARICA MANISERA
MARCO SANDRI

FOREWORD BY DEAN OLIVER AND SERGIO SCARIOLO

CRC CRC Press
Taylor & Francis Group



More resources....Podcast

Teaching Statistics and Data Science through Sports w
Berry Consultants

Jointly sponsored by
Journal of Statistics and Data Science Education

035

Teaching Statistics and Data Science through Sports

Jim Albert, Ph.D.
Professor Emeritus at Bowling Green State University

Mira a YouTube

DECISION-MAKING UNDER HIGH UNCERTAINTY

Learning Bayesian Statistics

Episodio de podcast
#131 Decision-Making Under High Uncertainty, with Luke Bornn
Learning Bayesian Statistics

11 June 2025 · 49 min
Luke Bornn: Toulouse, Teamworks & making a difference with data
Training Ground Guru Podcast

Play

EPISODE 377

STATS + STORIES

FOOTBALL FIGURES

KNOWLEDGE AT WHARTON

How the NFL Uses Data to Shape Rules and Create New Metrics
Knowledge at Wharton

HOW THE NFL TURNS DATA INTO DECISIONS

Mira a YouTube

EXPECTED VALUE
INSIDE THE SPORTS ANALYTICS WORLD

TRUMEDIA

PODCAST

Counterpoints
The Sports Analytics Podcast from MIT SMR

Where to Study Sports Analytics: Global Degree and Postgraduate Programs



2026 Sports Analytics Degree Program Availability Report: Which States and Schools Offer the Most Options



by Imed Bouchrika, PhD
Co-Founder and Chief Data Scientist

Share   

May 22, 2025 - News

UNC Charlotte to offer sports analytics degree starting this fall



UNIVERSITÄT
DES
SAARLANDES

Department of Sports Science

Sports Analytics

Jun.-Prof. Dr. Pascal Bauer

Sports Analytics Industry: Zelus → Teamworks Intelligence

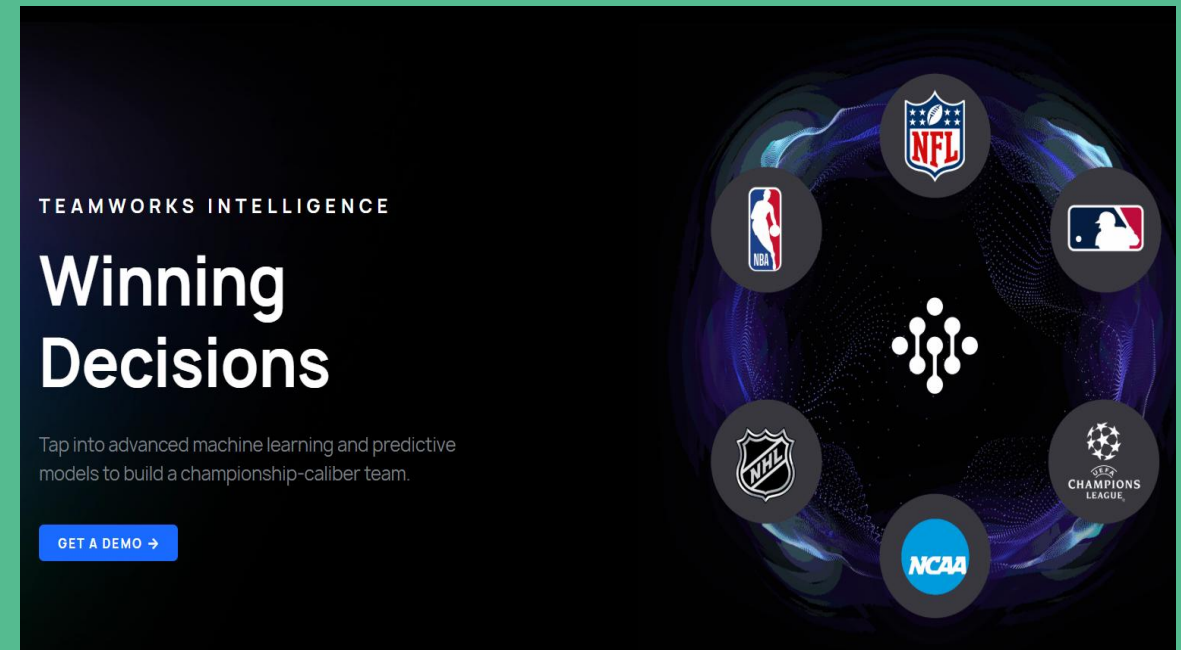
Zelus Analytics acquired by Teamworks (2024)

What is Teamworks Intelligence?

- Advanced ML and predictive models for team decisions
- Partners: NBA, NFL, MLB, NHL, NCAA, Champions League

From boutique consultancy to global platform

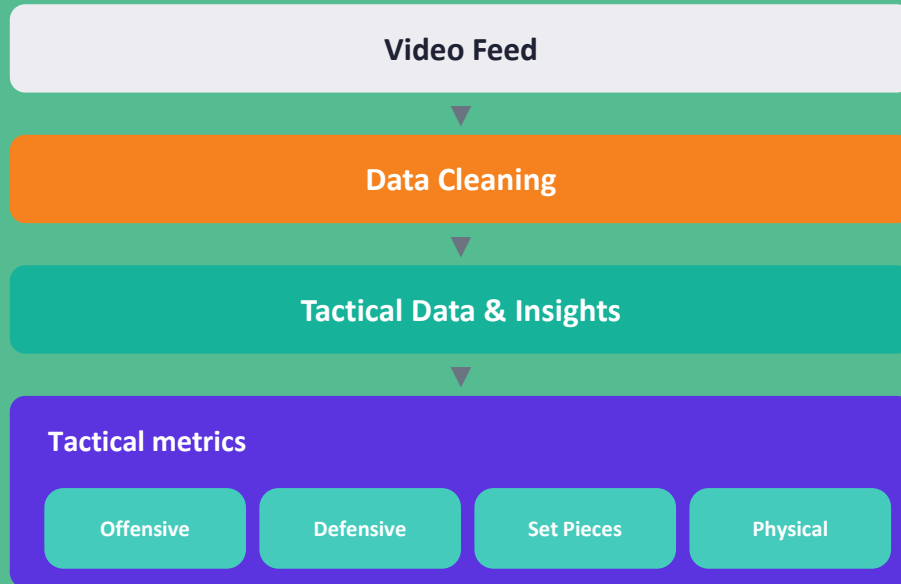
Zelus began as a specialized analytics consultancy. Its integration into Teamworks shows how specialist expertise is becoming a core asset in sports organizations.



Kognia: clean, tactical data in a single feed

Deeper tactical insight than event data alone — across 1st Team, Academy & Recruitment

HOW IT WORKS



Kognia's AI cleans and processes the feed into in-depth, customisable tactical metrics.

DEEPER THAN EVENT DATA



Proven technology

Excellence in tech with professional-football experience.

Fits your workflows

Flexible output to integrate within and enhance existing workflows.

Competitive edge

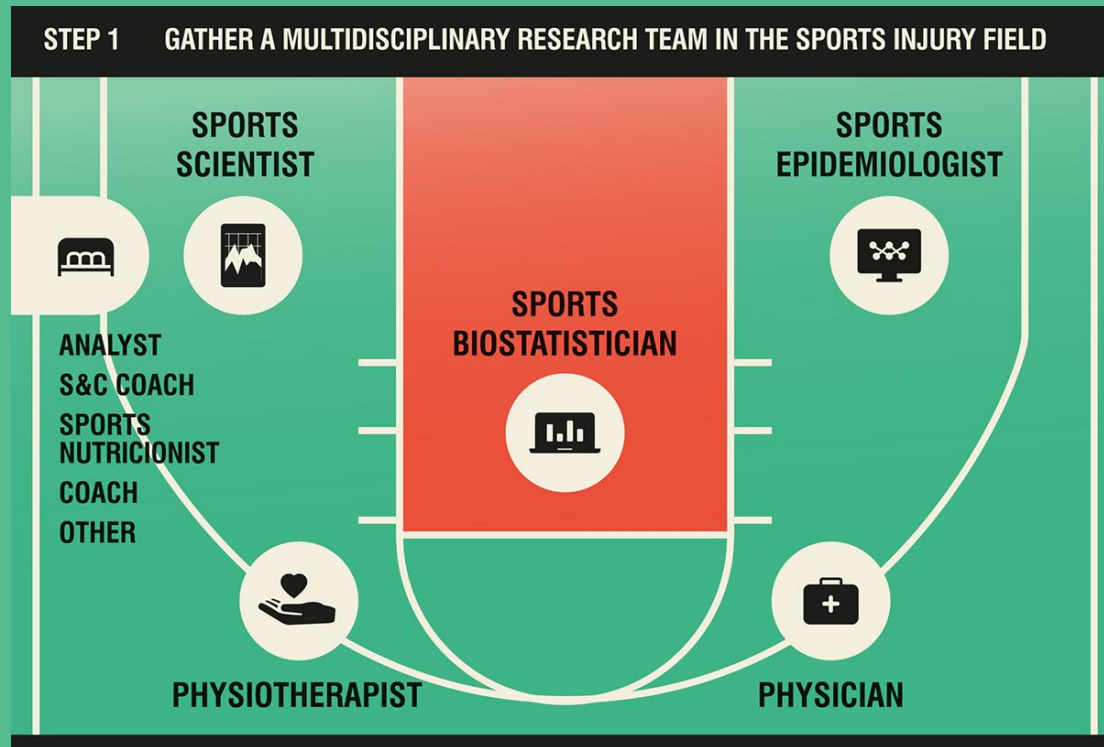
Tactical data across your entire club — 1st Team, Academy & Recruitment.

4. Case studies



"I enjoy every moment I am with the ball"

Johan Cruyff



Some of my contributions: Sports Analytics

Linear mixed models (LMM), Generalized linear mixed models, quasi-Poisson regression, LMM spurious correlation

MUNDO DEPORTIVO RESULTADOS TOP MD EQUIPOS SERVICIOS MIS NOTICIAS

BALONCESTO NBA

Un estudio español revela las claves del rendimiento

• NBA

0 2 20



Damian Lillard trata de superar a Jose Calderon (DON RYAN - AP)

Actualizado a 12/04/2013 2:15

Los investigadores españoles **Martí Casals**, del Área de Bioestadística de la Universitat Internacional de Catalunya, y **José A. Martínez**, de la Universidad Politécnica de Cartagena, han identificado las variables que influyen en la regularidad y el

Journal **International Journal of Performance Analysis in Sport** > Enter keywords, authors, DOI etc.

Volume 13, 2013 - Issue 1

61 Views

1 CrossRef citations to date

0 Altmetric

Articles

Modelling player performance in basketball through mixed models

Martí Casals & **A. Jose Martinez**

Pages 64-82 | Published online: 03 Apr 2017

Download citation <https://doi.org/10.1080/24748668.2013.11868632>

Annals of Operations Research
<https://doi.org/10.1007/s10479-022-04733-0>

ORIGINAL RESEARCH

Influence of Red and Yellow cards on team performance in elite soccer

Llorenç Badiella^{1,2} • **Pedro Puig**^{2,3} • **Carlos Lago-Peñas**⁴ • **Martí Casals**^{5,6,7}

Accepted: 12 April 2022

Check for updates

One of my contributions: Sports Biostatistics

Call to Increase Statistical Collaboration in Sports Science, Sport and Exercise Medicine and Sports Physiotherapy

Key Messages

- 1 Statistical and methods errors are common in sports science and sports medicine/physiotherapy research.
- 2 Collaboration between researchers and statisticians can reduce errors.
- 3 Sports science and medicine departments should improve statistical education with a focus on conceptual understanding rather than mathematical proofs and computation; it is more important for a sports scientist to understand, say, a 95% CI than to calculate one.
- 4 The applied science and clinical community should consider statistical outcomes in the early planning stages of research projects to avoid costly study design errors; this may be achieved by formally involving statisticians.



Study Details

299 randomly selected papers from top quality (quartile one) sports science journals were assessed to determine whether at least one co-author was affiliated with a biostatistics, statistics data science, data analytics, math, computer science, informational science, economics or epidemiology department.



Barriers to Collaboration



Segregation

Universities and research institutes are often spatially organised by discipline, which offers little opportunity for sports scientists and statisticians to interact.



Recognition

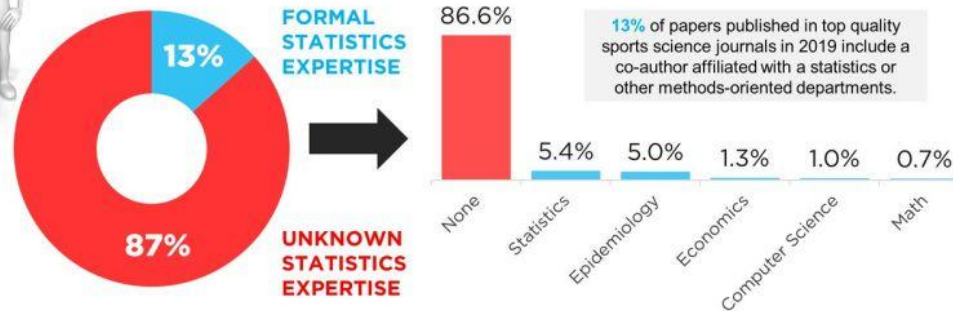
Statisticians may inadvertently avoid collaborating with applied researchers because mathematical statisticians receive greater academic recognition for theoretical than applied work.



Interpretation

What is considered genuine knowledge and what are allowable scientific claims differs between scientific disciplines; statisticians and practitioners may not agree on data interpretation.

Papers Including a Co-author in a Statistical Department

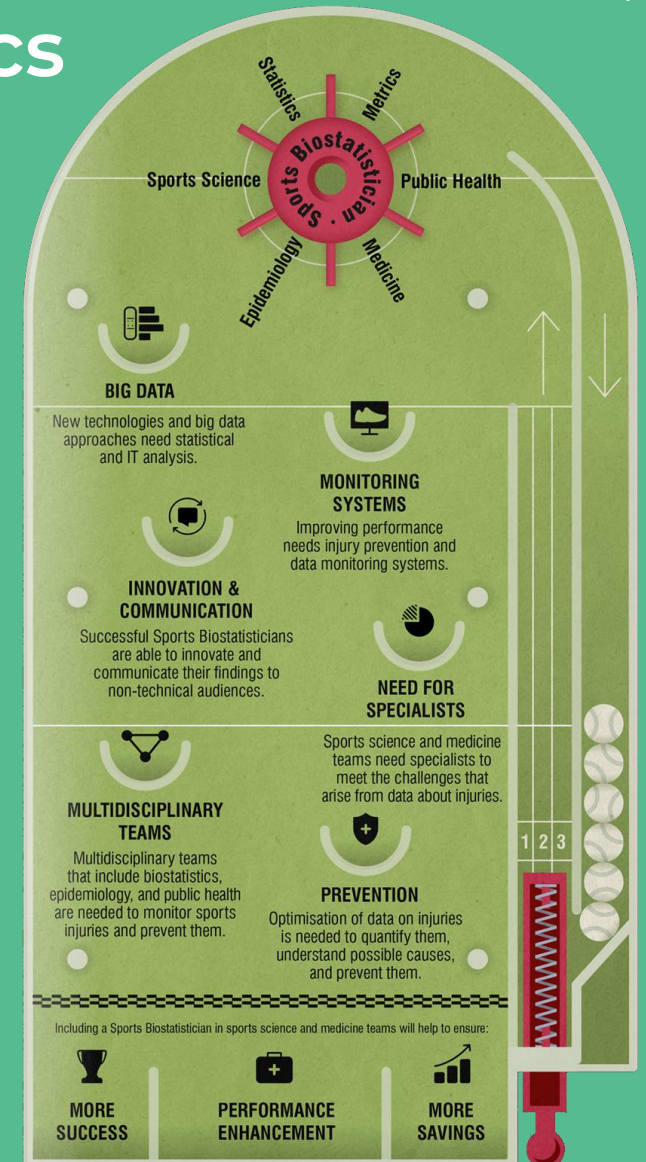


Created by Adam Virgile
adamvirgile.com

@AdamVirgile
@AVSportSci



Sainani KL, Borg DN, Caldwell AR, et al. Call to increase statistical collaboration in sports science, sport and exercise medicine and sports physiotherapy. *British Journal of Sports Medicine* Published Online First: 19 August 2020. doi: 10.1136/bjsports-2020-102607



Some of my contributions: Sports Medicine

Survival analysis; Late entry or left truncated; Standardized mortality ratio (SMRs), cause-specific Cox models, Competing risk analysis, Fine-Gray model, multiple imputation methods .

Appl. Sci. **2019**, *9*(3), 500; <https://doi.org/10.3390/app9030500>

Open Access Article

Mortality of NBA Players: Risk Factors and Comparison with the General US Population

Jose A. Martínez ¹ , Klaus Langohr ² , Julián Felipo ³  and Martí Casals ^{4,5,*} 

The image shows the top section of a journal article page. On the left is the Elsevier logo, featuring a tree and a person, with the word 'ELSEVIER' in orange. To the right, a grey box contains the text 'Contents lists available at ScienceDirect' in blue, 'Data in Brief' in large black font, and 'journal homepage: www.elsevier.com/locate/dib' in blue. Further right is a purple square icon with a white stylized 'D'. Below this is a thick black horizontal line. Under the line, the text 'Data Article' is on the left, and the title 'Data set on mortality of national basketball association (NBA) players' is in large black font. To the right of the title is a small icon for 'Check for updates'. At the bottom, the authors' names are listed: 'Jose A. Martínez^a, Klaus Langohr^b, Julián Felipo^c, Luciano Consuegra^d, Martí Casals^{e,f,*}'. The asterisk on Martí Casals indicates he is the corresponding author.

Open access Original research

BMJ Open Sport & Exercise Medicine

Causes of death in NBA players: a competing risks analysis

José A Martínez,¹ Klaus Langohr,² Luciano Consuegra-Sánchez ,³ Julian Felipo,⁴ Luis Asensio-Payá,⁵ Martí Casals⁶



Some of my contributions: Stats & Injury Epidemiology

SORT 39 (2) July-December 2015, 281-308

Parameter estimation of Poisson generalized linear mixed models based on three different statistical principles: a simulation study

Martí Casals^{1,2,3,4}, Klaus Langohr⁵, Josep Lluís Carrasco¹
and Lars Rönnegård⁶

Abstract

Generalized linear mixed models are flexible tools for modeling non-normal data and are useful for accommodating overdispersion in Poisson regression models with random effects. Their main difficulty resides in the parameter estimation because there is no analytic solution for the maximization of the marginal likelihood. Many methods have been proposed for this purpose and many of them are implemented in software packages. The purpose of this study is to compare the performance of three different statistical principles – marginal likelihood, extended likelihood, Bayesian analysis– via simulation studies. Real data on contact wrestling are used for illustration.

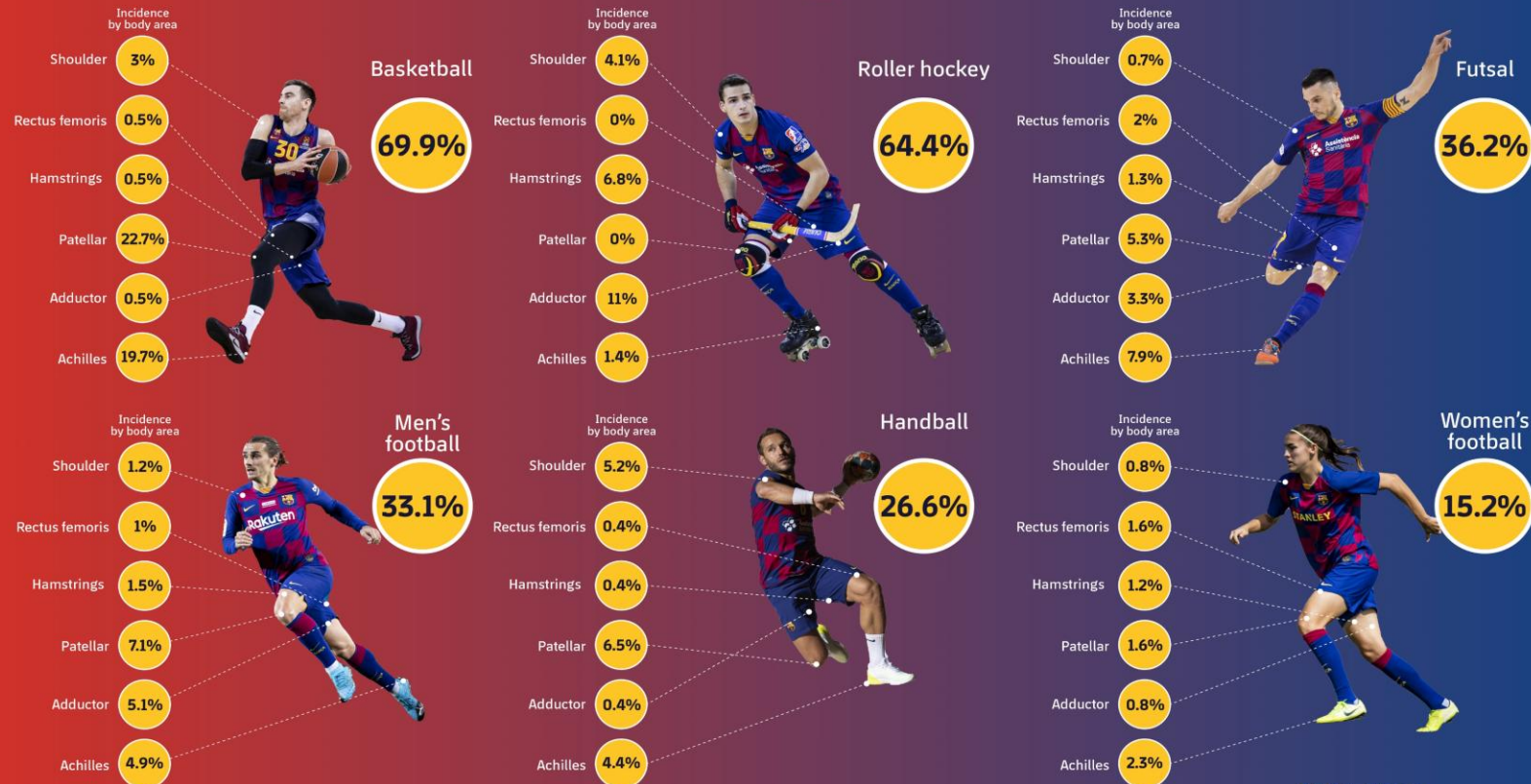
MSC: 62J12, 62P99, 62F99.

Keywords: Estimation methods, overdispersion, Poisson generalized linear mixed models, simulation study, statistical principles, [sport injuries](#).



Some of my contributions: Sports Science and Medicine

Incidence of Tendinopathy in FC Barcelona Teams during 8 Seasons



Reference: Florit, D., et al. *Journal of Sports Science & Medicine*, 2019

BARÇA INNOVATION HUB
Reinventing Sport



Sports Analytics and Biostatistics applied in FCB

- **Statistics & Education**
 - Statistical training and awareness among different professionals to help them ask better questions lead us to improved designs and decisions.
- **Performance and Sports Analytics**
 - Group meetings (internal projects)
- **Research on Injury prevention & epidemiology**



A break, group of Sports Statistics and group of friends. This is GRBIO!



- Modelization and ML
- Time-to-event models to understand athletes' health and well-being
- Meta-research and review for reporting of statistical techniques in Sports field.
- Injury and Mortality Analysis
- Software and Data visualization in Sports Analytics
- Statistical education in sports



Some of our contributions of reporting

Metaresearch; reporting; quality; guidelines; responsibility; Data Sharing; statistical techniques; reproducibility;

Electronic Journal of Applied Statistical Analysis
Vol. 17, Issue 03, December 2024, 653-675
DOI: 10.1285/i20705948v17n3p653

Reporting of clustering techniques in sports sciences: a scoping review

Daniel Fernández^a, Martí Casals^{a,b,c}, Martí Oliver^a, Montse Plensa^a, and Marica Manisera^d

^aDepartment of Statistics and Operations Research (DEIO), Universitat Politècnica de Catalunya - BarcelonaTech (UPC), Barcelona, Spain.
^bSport and Physical Activity Studies Centre (CEEAF), Faculty of Medicine, University of Vic-Central University of Catalonia (UVic-UCC), Barcelona, Spain.
^cNational Institute of Physical Education of Catalonia (INEFC-UB), Spain
^dBODaL-Lab, Department of Economics and Management, University of Brescia, Brescia, Italy.

15 December 2024

Using reporting guidelines in sports and exercise medicine research: why and how to raise the bar?

David Blanco , ¹ Aïda Cadellans-Arróniz , ¹ Márcio Vinícius Fagundes Donadio , ^{1,2} Melissa K Sharp , ³ Martí Casals , ^{4,5,6} Pascal Edouard , ^{7,8}

Review

Reporting of generalized linear mixed models (GLMM) in sports sciences: A scoping review

Martí Casals^{1,2,3} , Daniel Fernández⁴ , Lore Zumeta-Olaskoaga^{5,*} , Arnau Sánchez⁶ and Paola Zuccolotto^{7,8}

Journal of Sports Analytics
Vol. 11(0): 1–12
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Wiley Interdisciplinary Reviews: Computational Statistics

WILEY

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COMPUTATIONAL STATISTICS

SYSTEMATIC REVIEW

Reporting of Regression Models for Ordinal Responses in Sports Sciences Field: A Systematic Review

Daniel Fernández¹ | Mireia Estopañan¹ | Benjamin Baumer² | Martí Casals^{3,4,5}

Open access

Review

BMJ Open Sport & Exercise Medicine

Methodological quality and reporting using time-to-event data in sports science and medicine: a scoping review

Jordi Cortés , ¹ Rasmus Oestergaard Nielsen , ^{2,3} Martí Casals^{4,5}

Some of our contributions: Sports Analytics and Education

Original research article

Violinboxplot and enhanced radar plot as components of effective graphical dashboards: An educational example of sports analytics

Martí Casals^{1,2,3} and Pepus Daunis-i-Estadella⁴

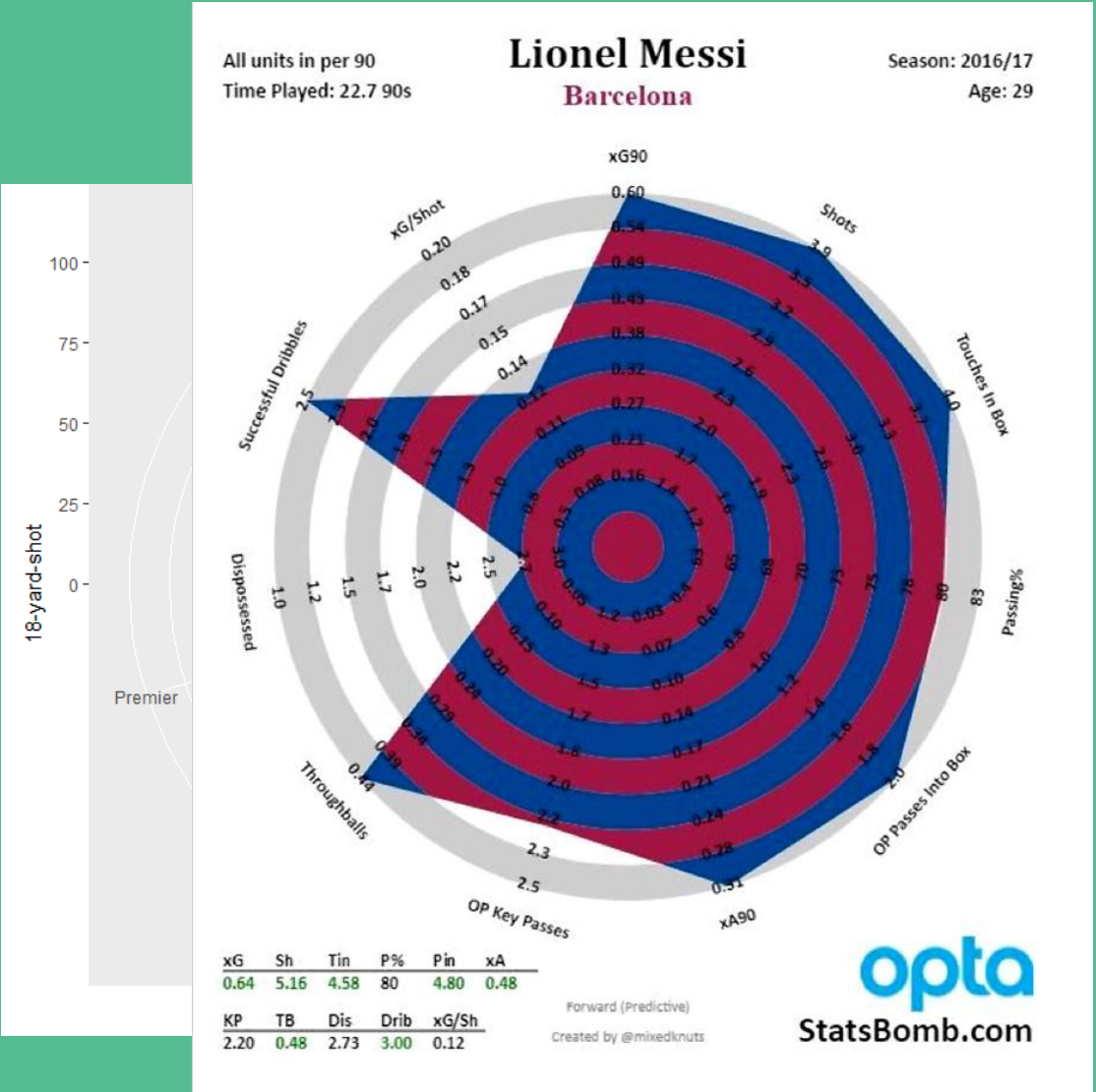
International Journal of Sports Science & Coaching
1–12
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DOI: 10.1177/17479541221099638
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Check for updates

CRAN Task View: Sports Analytics

Maintainer: Benjamin S. Baumer, Quang Nguyen, Gregory J. Matthews
Contact: ben.baumer at gmail.com
Version: 2026-06-14
URL: <https://CRAN.R-project.org/view=SportsAnalytics>
Source: <https://github.com/cran-task-views/SportsAnalytics/>

International Journal of Sports Science & Coaching
Sports Science
Issues
1136238
/spo



Some of our contributions of Tennis Research

International Journal of Sports Physiology and Performance, (Ahead of Print)

<https://doi.org/10.1123/ijssp.2023-0385>

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First Published Online: Apr. 29, 2024

Human Kinetics
BRIEF REVIEW

Quantifying Hitting Load in Racket Sports: A Scoping Review of Key Technologies

Quim Brich,¹ Martí Casals,^{1,2} Miguel Crespo,³ Machar Reid,⁴ and Ernest Baiget¹

¹National Institute of Physical Education of Catalonia (INEFC), University of Barcelona (UB), Barcelona, Spain; ²Faculty of Medicine, Sport and Physical Activity Studies Center (CEEAF), University of Vic–Central University of Catalonia (UVic-UCC), Barcelona, Spain; ³Development Department, International Tennis Federation, London, United Kingdom; ⁴Tennis Australia, Melbourne, VIC, Australia

PLOS ONE

RESEARCH ARTICLE

Retirements of professional tennis players in second- and third-tier tournaments on the ATP and WTA tours

Maria Palau¹, Ernest Baiget², Jordi Cortés³, Joan Martínez⁴, Miguel Crespo⁵, Martí Casals^{2,6,7*}

Original Research

Vol. 19, Issue 11, 2024 • November 01, 2024 CDT

Epidemiology and Factors Influencing Davis Cup Retirements Over the Past Twenty Years

Martí Casals, Jordi Cortés, Daniel Llenderozos, Miguel Crespo, Timothy E. Hewett, Lorena Martín, Ernest Baiget

tennis injuries teams competition tennis surface sports health

CCBY-NC-4.0 • <https://doi.org/10.26603/001c.123948> • PMID: PMC11534158 • PMID: 39502537

Sports Health: A Multidisciplinary Approach

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American Orthopaedic Society
for Sports Medicine

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Impact Factor: 3.1 / 5-Year Impact Factor: 4.0

Journal Homepage

Restricted access | Research article | First published online November 21, 2025 | [Re-use permissions](#)

Noncompleted Matches in Professional Women's Tennis (1975–2024): Epidemiology, Trends, and Associated Factors of Walkovers and Defaults

Victoria Peña, PT, MSc, Ernest Baiget, PhD, [...], and Martí Casals, PhD [View all authors and affiliations](#)

Retirements, defaults and walkovers of professional tennis players in ATP and WTA events.

Tennis Analytics and Compositional Data Analysis (CoDA)

Austrian Journal of Statistics

MMMMMM YYYY, Volume VV, Issue II, 1-17.

<http://www.ajs.or.at/>



Court Surfaces: A Compositional Approach to Tennis Analytics

Pepus Daunis-i-Estadella

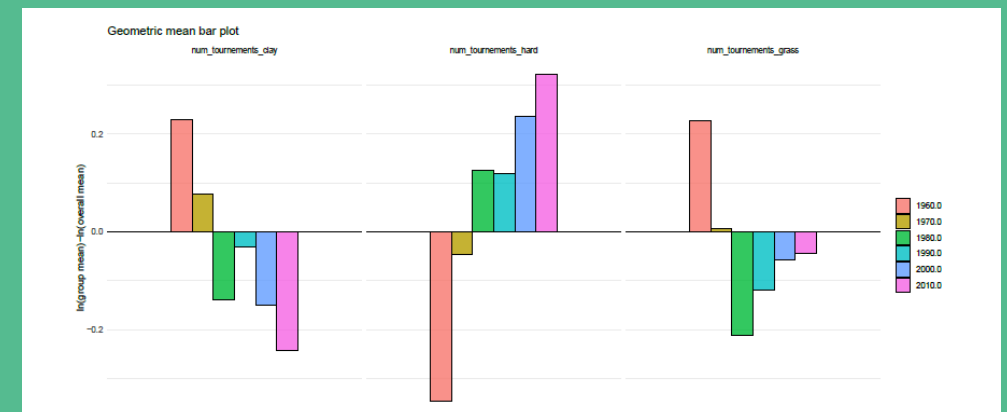
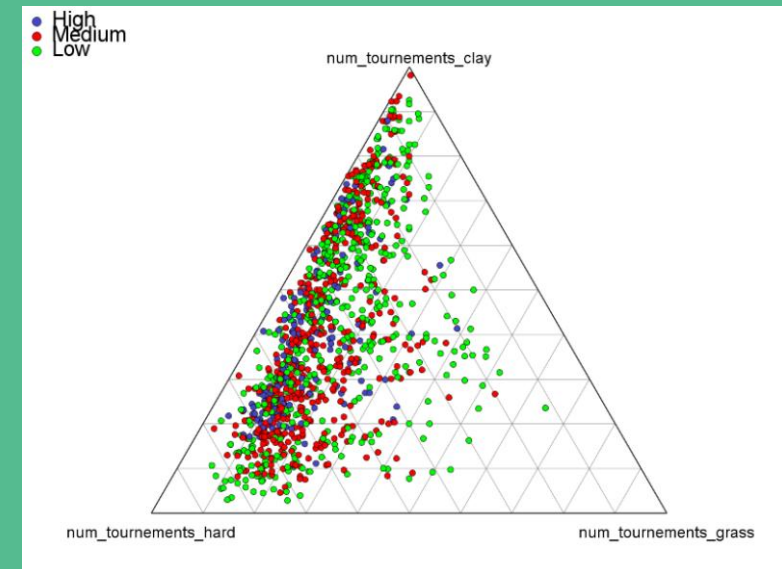
University of Girona
Catalonia, Spain

Ernest Baiget

National Institute of
Physical Education of
Catalonia (INEFC-UB)
Spain

Martí Casals

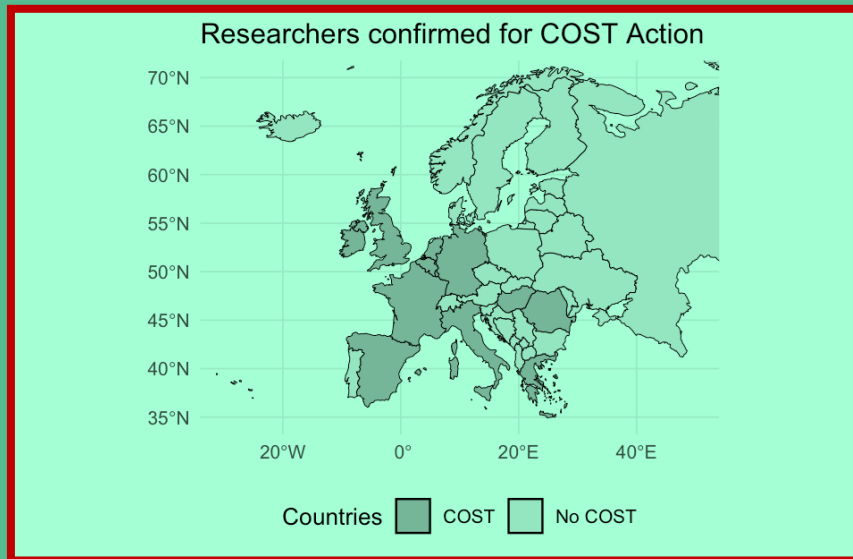
National Institute of
Physical Education of
Catalonia (INEFC-UB)
Spain





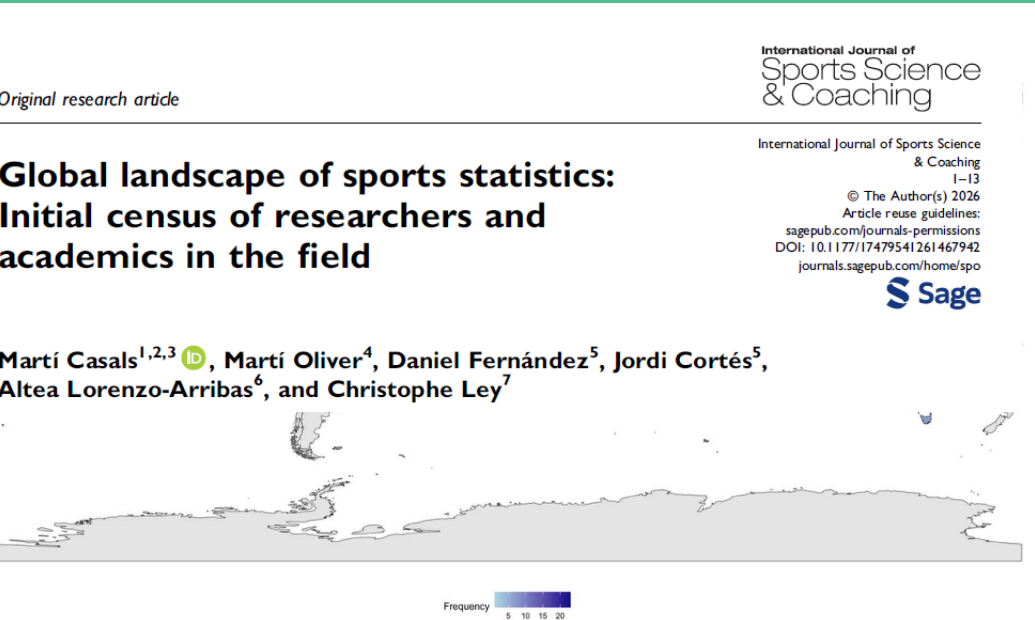
Our work is ongoing... Unfinished matches and studies, stay tuned! 😊

5. Advancing Sports Statistics: Building Networks and Shaping the Future



Initial Census Sports Statisticians: Accepted!

Glogal Landscape of Sports Statistics:
Initial Census of Researchers and Academis on the Field



Martí Casals, Martí Oliver, Daniel Fernández, Altea Lorenzo-Arribas, Christophe Ley

Age range	45-59 years and 60+ years.	18-29 years and 30-44 years.	60 + years.
Country	Countries of low frequency and Italy.	Spain and United States.	Australia.
Years worked in sports statistics	5 year or more.	Less than 5 years.	5 years or more.



Jim Albert



Michael Lopez



William Hopkins



Marica Manisera



Benjamin Baumer



Caroline Finch



As statisticians, maybe we should all
become “sport analysts thinkers”

Martí Casals Toquero

@CasalsTMarti



“Gardeners don’t
make a plant grow.
The job of a gardener
is to create the
optimal conditions
for its growth.”

Sir Ken Robinson

And creating the optimal conditions for sports analysts to work



Move physically
and mentally.
Sports statistics
does the same.



Martí Casals
STATSTHINKING

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