

PATRICK A. WARD PhD, CSCS
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Professional Profile

I am an accomplished sport scientist and data analyst with over a decade of experience spanning private business, industry, elite sport, and academia. I've been an invited speaker at conferences around the world on topics specific to leveraging data-driven insights in sports science, developing athlete monitoring strategies, and advancing evidence-based practices. I have a strong passion for mentoring future sports science leaders and driving innovative research in athlete performance.

Skills and Experience

- 10+ years in variety of roles (e.g., data analyst, researcher, strength coach) within the applied sport setting
- Strong knowledge of evidence-based practice in sports science, athlete monitoring strategies, and statistical analysis of data generated by groups and individual athletes
- Able to design and conduct scientific research in sport
- Experienced in data aggregation, clean-up, and analysis
- Able to create end-user applications (e.g., web applications) to contextualize data analysis for practitioners in the field
- Experienced with various athlete monitoring technologies (e.g., Catapult GPS, Force Decks, OptoJump, Nordbord)

Technical Proficiencies

- R statistical analysis software
- STAN
- Python
- SQL
- AWS
- Power BI
- Microsoft Office applications

Professional Experience

Seattle Seahawks (NFL)

Dates: September 2017— Present

Position: Director of Research and Development

- Responsibility:**
- Develop statistical approaches to evaluate player value, quantify future success projections, and model injury risk to aid management and personnel staff in decision-making process.
 - Conduct draft analysis to evaluate new NFL prospects and identify talent.
 - Perform daily analysis of player monitoring data (e.g., GPS, accelerometer, session RPE, wellness).
 - Conduct research on new technologies for player health to ensure validity and reliability.
 - Develop player monitoring strategies around rehabilitation and return-to-play.
 - Create end user reports and web applications for easy access to data.

Seattle Seahawks (NFL)

Dates: July 2014— September 2017

Position: Sports Science Analyst

- Responsibility:**
- Set up player monitoring strategies and develop analysis to assist coaching, strength and conditioning, and medical staffs on the current health status of individual players.
 - Develop daily reports to provide decision makers with relevant information to make decisions around training modifications for players.
 - Establish an evidence-based approach to monitoring athletes during rehabilitation and return-to-play.

Canada Men's Basketball – National Team

Dates: July 2013— September 2014

Position: Applied Physiologist & Sports Science Consultant

Responsibility:

- Set up best practices methods for data collection and analysis for the senior men's team.
- Worked with the head strength and condition coach and medical director to plan training interventions for players based on physiological needs.
- Co-authored manuscript detailing data collection processes for all junior level and developmental teams within the Canadian basketball system.
- Assisted in the development of a strength and conditioning training methodology for all basketball squads below the senior team.

Nike Sports Research Lab

Dates: October 2012— July 2014

Position: Sports Scientist

Responsibility:

- Conducted athlete assessments for high-performance sports research projects.
- Designed training programs and oversaw training load monitoring strategies for Nike-sponsored athletes.
- Interpreted assessment outcome data for coaches and athletes.

Optimum Sports Performance

Dates: June 2006— October 2012
Position: Founder

Responsibility: In addition to owning and managing the business:

- Carried out all aspects of the development and implementation of scientific sports performance programming for athletes in a variety of disciplines.
- Implementation included overseeing athlete assessment, program design to meet performance demands of the specific sport, coaching athletes, soft tissue/massage therapy, recovery and regeneration sessions, and appropriate nutritional counseling.
- Worked with professional and amateur athletes in a variety of sports, such as volleyball, golf, soccer, hockey, baseball, swimming, cycling, and marathon running.
- Consulted to professional clubs such as the Seattle Sounders Soccer Club, Eastern Washington University Football, and the Arizona Sundogs of the Central Hockey League.

Academic Appointments

Lehman College *The City University of New York*

Dates: March 2024 -
Position: Adjunct Appointment in the Health Sciences Department – Applied Statistics

Responsibility:

- Created an applied statistics curriculum for students in the Masters of Exercise Science program. The course is designed to teach statistical concepts and provide a framework for coding analysis in R.
- The course spans several topics within applied statistics and aims to develop skills in simulation, regression modeling, and comparing and contrasting frequentist and Bayesian analysis.

University of Technology Sydney

Dates: Oct 2020 – July 2022
Position: Adjunct Appointment – Human Performance Research Center

Responsibility:

- Content developer for the Performance and Data Science Course within the Masters of Sports Science program
- Created weekly lectures, quizzes, and homework assignments specific to data analysis methodology within the applied sports environment.

Education

Institution: Liverpool John Moores University
City/Country: Liverpool, U.K
Qualification: Doctor of Philosophy
 Thesis Title: *An Evaluation of the Physical Demands of American Football Training in the NFL*
Completed: 2018

Institution: California University of Pennsylvania
City/Country: California, PA
Qualification: M.S. Exercise Science & Health Promotion
Completed: 2007

Institution: Berklee College of Music
City/Country: Boston, MA
Qualification: B.A. Music Performance (Jazz Guitar)
Completed: 2001

Mentorship & Supervision

Name: Courtney Sullivan
Qualification: PhD
Title: The talent selection and career progression of professional Australian Football players
Institution: University of Technology Sydney
Completion: 2018
Role: Statistical support

Name: Keith D'Amelio
Qualification: PhD
Title: Physical Activity Demands of NBA Game Play
Institution: University of Technology Sydney
Completion: 2020
Role: Statistical support

Name: Conor McNeill
Qualification: PhD
Title: The eccentric force-velocity-load relationship in profiling and training Rugby Union athletes
Institution: Waikato University
Completion: 2022
Role: Statistical support

Name: Aaron Pearson
Qualification: Masters
Title: Exploring lower limb asymmetries in major and minor league ice-hockey players from IMU and accelerometer data
Institution: University of Montreal
Completion: 2022
Role: External supervisor

Name: Matt Hawkey
Qualification: PhD
Title: An evaluation framework for professional soccer
Institution: Victoria University
Completion: 2023
Role: External supervisor

Name: Scot Morrison, DPT
Qualification: PhD
Title: The measurement and quantification of strength during the return to play process in sport.
Institution: University of Technology Sydney
Completion: Expected 2026
Role: External supervisor

Published Research

1. **Ward P**, Ramsden S, Coutts A, Hulton A, Drust B. (2018). Positional differences in running and non-running activities during elite American football training. *J Strength Cond Res*; 32(7): 2072-2084.
2. **Ward P**, Tankovich M, Ramsden JS, Drust B, Bornn L. (2018). Volume and intensity are important training related factors in injury incidence in American football athletes. Sloan Analytics Conference Paper.
3. Sullivan C, Kempton T, **Ward P**, Coutts AJ. (2018). Factors associated with early progression in professional Australian football players. *J Sports Sci*, 36(19), 2196-2201.
4. Barrett S, McLaren S, Spears I, **Ward P**, Weston M. (2018). The influence of playing position and contextual factors on soccer players' match differential ratings of perceived exertion: A preliminary investigation. *Sports*; 6(1).
5. **Ward P**, Coutts AJ, Pruna R, McCall A. (2018). Putting the 'I' back in team. *Int J Sports Physiol Perform*, E-published ahead of print.
6. Campbell BI, Bove D, **Ward P**, Vargas A, Dolan J. (2017). Quantification of training load and training response for improving athletic performance. *Strength Cond J*; 39(5), 3-13.
7. Morrison S, **Ward P**, duManoir, GR. (2017). Energy system development and load management through the rehabilitation and return to play process: A clinical commentary. *International Journal of Sports Physical Therapy*; 12(4), 697-710.
8. Bornn L, **Ward P**, Norman D. (2019). Training schedule confounds the relationship between Acute:Chronic Workload Ratio and Injury. Sloan Analytics Conference Paper.

9. Sullivan C, Kempton T, **Ward P**, Coutts AJ. (2020). The efficacy of talent selection criteria in the Australian Football League, *J Sports Sci*; 38(7): 773-779.
10. **Ward P**, Windt J, Kempton T. (2019). Business intelligence: How sport scientists can support organization decision making in professional sport. *Int J Sports Physiol Perf*; 14(4): 544-546.
11. Impellizzeri FM, Woodcock S, McCall A, **Ward P**, Coutts AJ. The acute-chronic workload ratio-injury figure and its 'sweet spot' are flawed. Pre-print. SportRxiv.
12. Impellizzeri FM, **Ward P**, Coutts, AJ, Bornn L, McCall A. (2020). Training load and injury: Part 1. The devil is in the detail – Challenges to applying the current research in the training load and injury field. *Journal of Orthopedic and Sports Physical Therapy*; 50(10): 574-576.
13. Impellizzeri FM, **Ward P**, Coutts, AJ, Bornn L, McCall A. (2020). Training load and injury: Part 2. Questionable research practices hijack the truth and mislead well-intentioned clinicians. *J Orthopedic and Sports Physical Therapy*; 50(10): 577-584.
14. Impellizzeri FM, McCall A, **Ward P**, Bornn L, Coutts AC. (2020). Training load and its role in injury prevention, Part 2: Conceptual and Methodologic Pitfalls. *J Athletic Training*; 55(9): 893-901.
15. Sullivan C, Kempton T, **Ward P**, Coutts AJ. (2020). Career performance trajectories of professional Australian football players. *Int J Sports Physiol Perform*; 15(10):1363-1368.
16. Schelling X, Fernandez J, **Ward P**, Fernandez J, Roberson S. (2021). Decision support system applications for scheduling in professional team sport. The team's perspective. *Front Sports Act Living*; 3: 678489.

17. Bullock GS, Hughes T, Arundale AH, **Ward P**, Collins GS, Kluzek S. (2022). Black box prediction methods in sports medicine deserve a red card for reckless practice: A change in tactics is needed to advance athlete care. *Sports Med*.
18. Green M, **Ward P**, Bickley M, Gillett M, O’Boyle A, Drust B. (2022). Time to change direction in training load monitoring in elite football? The application of MEMS accelerometers for the evaluation of movement requirements. *Sci Med Football*. DOI: 10.1080/24733938.2022.2053337.
19. Martin M, Rampinini E, Bosio A, Azzalin A, McCall A, **Ward P**. (2022). Relationship between internal and external load measures and fitness level changes in professional soccer players. *Res Quart Exer Sport*. DOI: 10.1080/02701367.2022.2053646.
20. Fazackerley LA, Mindett GM, McLaren S, **Ward PA**, Marsh D, Burgess D, Duncan CS, Pollard B, Griffith S, Gill N, Kelly VG. (2023). The annual training and competitive calendar in elite football: A road to the holy grail? *Int J Strength Cond*; 1-9.
21. Bullock GS, **Ward P**, Impellizzeri FM, Kluzek, S, Hughes T, Dhiman P, Riley R, Collins GS. (2023). **The trade secret taboo: Open science methods are required to improve prediction models in sports medicine and performance.** *Sports Med*; 53(10): 1841-1849.

22. Bullock GS, **Ward P**, Hughes T, Thigpen CA, Cook CE, Shanley E. (2023). **Using randomized controlled trials in the sports medicine and performance environment: Is it time to reconsider and think outside the methodological box?** *Journal of Orthopaedic & Sports Physical Therapy*; 0(6): 1-4.
23. Gleason BH, **Ward P**, Hornsby G. (2023). **Where is the sport science in American football?** *International Journal of Strength and Conditioning*; 1-11.
24. Bullock GS, **Ward P**, Impellizzeri FM, et al. (2023). **Upfront and open, shrouded in secrecy, or somewhere in between? A meta research systematic review of open science practices in sports medicine research.** *Journal of Orthopedic & Sports Physical Therapy*. DOI: 10.2519/jospt.2023.12016.
25. McNeil C, Beaven CM, McMaster DT, **Ward P**, Gill N. (2023). **Eccentric force-velocity-load relationship in trained rugby athletes.** *J Strength Cond Res*. DOI: 10.1516/JSC.0000000000004648.
26. Bullock GS, **Ward P**, Kluzek S, Hughes T, Shanley E, Arundale A, Ranson C, Nimphius S, Riley R, Collins GS, Impellizzeri FM. (2023). **Paving the way for greater open science in sports and exercise medicine: Navigating the barriers to adopting open and accessible data practices.** *Br J Sports Med*. DOI: 10.1136/bjsports-2023*107225.
27. Losciale J, Truong LK, **Ward P**, Collins GS, Bullock GB. (2024). **Limitations of separating athletes into high or low-risk groups based on cut-off. A clinical commentary.** *Int J Sport Phys Thera*. DOI: 10.26603/001c.122644.
28. West S, Shrier I, Impellizzeri FM, Clubb J, **Ward P**, Bullock GB. (2024). **Training-load management ambiguities and weak logic: Creating potential consequences in sport training and performance.** *Int J Sport Phys and Perf*. DOI: 10.1123/ijsp.2024-0158.

29. Martin CL, Evenson KR, Moore JB, Marshall S, Wolf J, Fernandez G, Nicholson KF, Impellizzeri FM, **Ward P**, Shrier I, O’Connell N, Thigpen CA, Shanley E, Kline D, Hartshorne M, Bullock GB. (2025). **Using biomechanical devices in elite baseball pitchers: A preliminary feasibility study.** *Int J Sport Phys and Thera.* DOI: 10.26603/001c.134013.
30. Pinkoski A, **Ward P**, Kluzek S, Arundale AJH, Bullock GB. (2025). **Scraping the surface: A guide to data collection using web scraping in sports medicine.** *Journal of Strength and Conditioning Research.* DOI: 10.1519/JSC.0000000000005253.
31. West S, **Ward P**, Plisky P, Beiting J, Martin C, Losciale JM, Stitzel J, Marshall S, Butler R, Morrison S, Bullock GB. (2026). **Getting the most from your data: Using statistical process controls for data quality assurance in sport science data.** *Journal of Strength and Conditioning Research.* DOI: 10.1519/JSC.0000000000005341.

Research Conference Presentations

1. D’Amelio, **Ward P**, Coutts, AJ. Quantifying the match activity demands of NBA Basketball. European Conference of Sports Science (2018).
2. **Ward P**, Tankovich M, Ramsden JS, Drust B, Bornn L. Volume and intensity are important training related factors in injury incidence in American football athletes. Sloan Analytics Conference – Invited presentation as part of the research competition (2018).
3. Brookreson NB, **Ward P**. Examination of Heart Rate Characteristics of Division I Women’s Basketball. NSCA National Conference (2017).

4. **Ward P**, Batterham A, Coutts A, Hulton A, Riddle D, Ramsden S, Garcia T, Drust B. Within-Subject Correlation of Session-Rating of Perceived Exertion and Player Load in American Football. NSCA National Conference (2016).

5. **Ward P**, Gopaladesikan S. Inferring the Influence of Training Load on Player Readiness. Cascadia Symposium of Statistics in Sport (2016).
6. **Ward P**, Riddle D, Ramsden S, Garcia T, Drust B. An Evaluation of the In-Season Micro-Cycle Planning For Elite NFL Players. World Congress of Science in Football (2015).
7. **Ward P**. Communicating Data in Applied Sport: Engaging decision-makers in the scientific process. European College of Sport Science Conference (2021).
8. **Ward P**. Science in the Applied Environment: Setting up systems to scientifically evaluate your sport. NSCA Northwest Region Conference (2022).
9. **Ward P**. Research & Analysis in the Applied Environment. Notre Dame Sports Performance Summit (2023).
10. **Ward P**. Research & Analysis in the Applied Environment. NSCA National Conference (2023).