The Impact of Sports Science on Athletic Training

Shifting Practice to Embrace Technology and Data Science Advances in Health and Performance

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Disclosures

None to report



Objectives

- 1. Define sports science and how it's associated with health and performance.
- 2. Understand the role of the AT in sports science.
- 3. Identify common sports science strategies utilized in professional and collegiate athletics.

































Taskforce on Sports Science, Health, & Data Analytics





SPORTS SCIENCE, HEALTH AND DATA ANALYTICS IN SPORTS MEDICINE

A White Paper created through a collaboration of the NATA Steering Committee on Sports Science, Health and Data Analytics

PREFACE	
A special thank you is exte and devoted countless hour	nded to the NATA volunteers and associate members who created the material s on this project over the past year.
Adam Annaccone	University of Texas, Arlington Steering Committee Chair, Project Co-Lead
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May 2020





Taskforce on Sports Science, Health, & Data Analytics









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NSCA's ESSENTIALS of SPORT SCIENCE

Duncan French Lorena Torres Ronda editors

NSCA NATIONAL STRENGTH AND CONDITIONING ASSOCIATION



Taskforce on Sports Science, Health, & Data Analytics





"the analysis and application of scientific principles, theories, and data used in a collaborative approach to enhance decision-making associated with injury risk mitigation, objective return-to-play criteria, and other health and performance outcomes."

















Role of the AT

JOSPT

Select 🗸

Research Report

All MCIDs Are Wrong, But Some May be Useful

Christopher W. Boyer, PT, DPT, **, PT, DPT** lan E. Lee, PT, DSc, **, PT, DSc** Matthew S. Tenan, PHD, ATC, **PHD, ATC AFFILIATIONS** ~

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Military Medicine AMSUS

Article Navigation

JOURNAL ARTICLE

The Military Orthopedics Tracking Injuries and Outcomes Network: A Solution for Improving Musculoskeletal Care in the Military Health System @

Timothy C Mauntel, PhD, ATC, Matthew S Tenan, PhD, ATC, Brett A Freedman, MD, MC, USAR, Benjamin K Potter, MD, MC, USA, Matthew T Provencher, MD, MC, USNR, John M Tokish, MD, MC, USA (retired), Ian E Lee, PT, DSc, SC, USA,

PDF

Matt Tenan, PhD ATC FACSM • 1st Real-World Evidence Scientist

If you do Sports Medicine without data, you will fail. If you do Sports Medicine with poor data tools, you will fail.

Please, turn your Data into Information and collaborate with others to accomplish mutual goals. #data #medicine #sports



...

Data Informed > Data Driven



Collaborate

Standardized Method



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Risk Reduction, Wellness, and Health Literacy

Assessment, Evaluation, and Diagnosis

Critical Incident Management

Therapeutic Intervention

Health Administration and Professional Responsibility



(BOC, Practice Analysis 8th Edition, 2021)

Defining Return to Sport

- Return to Participation
 Return to Sport
- Return to Performance







Consensus statement

2016 Consensus statement on return to sport from the First World Congress in Sports Physical Therapy, Bern $_{\mbox{FREE}}$

https://bjsm.bmj.com/content/50/14/853

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Strategic Assessment of Risk and Risk Tolerance (StARRT) framework for return to play decisions.



Consensus statement

2016 Consensus statement on return to sport from the First World Congress in Sports Physical Therapy, Bern $_{\rm FREE}$

https://bjsm.bmj.com/content/50/14/853

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1. INJURY MANAGEMENT



Integrating RTS information to make an optimal decision.



Data Collection

BMJ Open Sport & Exercise Medicine Which parameters to use for sleep quality monitoring in team sport athletes? A systematic review and metaanalysis

> João Gustavo Claudino,^{1,2} Tim J Gabbett,^{3,4} Heiton de Sá Souza,⁵ Mário Simim,⁶ Peter Fowler,^{7,8} Diego de Alcantara Borba,⁹ Marco Melo,¹⁰ Altamiro Bottino,¹⁰ Irineu Loturco,¹¹ Vânia D'Almeida,⁵ Alberto Carlos Amadio,¹ Julio Cerca Serrão,¹ George P Nassis¹²

Association Between Spikes in External Training Load and Shoulder Injuries in Competitive Adolescent Tennis Players: The SMASH Cohort Study

Fredrik Johansson, PhD,^{1+S} Ann Cools, PhD,¹¹ Tim Gabbett, PhD,¹⁺ Jaime Fernandez-Fernandez, PhD,¹⁺ and Eva Skillgate, PhD⁺¹⁺

The Role of Psychological Readiness in Return to Sport Assessment After Anterior Cruciate Ligament Reconstruction

Anne Gro Heyn Faleide,^{*†‡} PT, MSc, Liv Heide Magnussen,[§] PT, Prof., Torbjørn Strand,[†] MD, Bård Erik Bogen,^{†§} PT, PhD, Rolf Moe-Nilssen,[‡] PT, Prof., Ingunn Fleten Mo,[†] PT, MSc, Willemijn Vervaat,^{II} PT, MSc, and Eivind Inderhaug,^{‡II} MD, MPH, PhD Investigation performed at Haraldsplass Deaconess Hospital, Bergen, Norway



Technology

Systematic Review

Wearable Sensor Technology to Predict Core Body Temperature: A Systematic Review

Conor M. Dolson ¹, Ethan R. Harlow ^{2,3}, Dermot M. Phelan ⁴, Tim J. Gabbett ^{5,6,7}, Benjamin Gaal ¹, Christopher McMellen ^{2,3}, Benjamin J. Geletka ^{1,2,8}, Jacob G. Calcei ^{2,3}, James E. Voos ^{2,3} and Dhruv R. Seshadri ^{2,9,*}

> > Am J Sports Med. 2020 Apr;48(5):1220-1225. doi: 10.1177/0363546520905543. Epub 2020 Mar 2.

What Can a Jump Tell Us About Elbow Injuries in Professional Baseball Pitchers?

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John Mayberry <sup>1</sup>, Scott Mullen <sup>2</sup>, Scott Murayama <sup>3</sup>
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Affiliations + expand PMID: 32119563 DOI: 10.1177/0363546520905543

LITERATURE REVIEW]

LAUREN C. BENSON, PhD¹ + ANU M. RÄISÄNEN, PT, PhD¹ + VALERIYA G. VOLKOVA, BSc¹ KATI PASANEN, PT, PhD¹⁴ + CAROLYN A. EMERY, PT, PhD¹³⁴

Workload a-WEAR-ness: Monitoring Workload in Team Sports With Wearable Technology. A Scoping Review

Ankle Dorsiflexion Affects Hip and Knee Biomechanics During Landing

Jeffrey B. Taylor, PhD, DPT,** lena S. Wright, MS,*5" Justin P. Waxman, PhD,* Randy J. Schmitz, PhD, ATC,* James D. Groves, BS, SPT,* and Sandra J. Shuitz, PhD, ATC*

NFL Expands Partnership to Eight Research Universities to Measure On-Field Head Impacts Using Novel Mouthguard Sensors

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Thank You!



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Clinical Assistant Professor | Director, Simulation | Athletic Trainer, Student Health C...







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