

Sports Medicine Analytics: On the Cutting Edge

Overview:

Previously, AT Efficiency discussed the [potential of analytics in sports medicine](#). Now, let's examine the types of analytics that are currently shaping the broader health care landscape. How can this be applied to sport medicine? What resources are available to utilize? The goal of this article is to dive deeper down the rabbit hole and provide a framework to the importance analytics plays in sports medicine.

Not only is big data helping drive the shift towards value-based care, its utilization enables more data-supported decisions while improving both the efficiency and the quality of care given. Security and diversity of info has typically been a challenge in health care data, but so has budget and ease-of-use, which may be more prevalent challenges in the athletic training setting.

What to know:

Health care analytics facilitate evidence-based decision-making, increase efficiency (if the systems are well-designed!), and contributes to developing best practices. The focus in all disciplines is shifting towards maintaining and improving health, not just care. There's a fantastic infographic from the New England Journal of Medicine (NEJM) [article](#) cited below that describes all of the main types of analytics in healthcare, but here are the most applicable ones pertaining to the sports medicine setting.¹

- **Diagnostics:** data mining and analysis to identify causes of illnesses/injury.
- **Preventative medicine:** predictive analytics and data analysis of genetic, lifestyle, and social circumstances to prevent disease.
- **Precision medicine:** leveraging aggregate data to drive hyper-personalized care.
- **Population health:** monitor big data to identify disease/injury trends and health strategies based on demographics, geography, and socio-economics.

Diagnostics is where effective documentation and a good EMR system comes most into play. It is the responsibility of these companies to configure their user interfaces so that they can extract important data effectively. However, it is the responsibility of athletic trainers to document purposefully. Currently, athletic trainers can run reports and identify trends themselves based on clinical suspicions, but in the broader healthcare system, the EMR's Research & Development divisions do this to improve their products as well as onsite clinicians and hospital analytics teams.

Preventative medicine is where Athletic Training has the most potential above any other health care setting. If we can implement processes purposefully, not only could we revolutionize the

way we treat our patients, but we could have a huge impact on health care in this domain. We are able to see patients while they are healthy and monitor changes over time. Using effective baseline measures, we are best positioned to detect changes that might lead to injury. The challenge lies in the many options for baseline testing, which many in our profession are already working to identify.

Precision medicine: One example of this already happening in Sports Medicine comes from the United States Olympic Committee (USOC). USOC developed an Elite Athletic Health Program (EAHP) for their women's wrestlers. It took known risk factors for non-contact ACL injuries and shoulder instability/dislocations and targeted specific individuals with personalized interventions through risk profiling. This led to a 60% reduction in injuries that required surgery.²

Population health: What this would allow athletic trainers to do is navigate injury trends more specifically. The above factors may be particularly useful in the industrial, outpatient, and other emerging settings. In the more traditional settings, athletic trainers can identify trends between sports, gender, and potentially even position within the team or major (if you get that specific your documentation). In a future article, we hope to provide a tutorial on the reporting capabilities of some of the most popular Athletic Training EMRs.

Conclusion:

The challenge with healthcare data is that there are so many things that can be monitored and measured. Our suggestion is to start with a narrow focus. Get good at the things that are high priority and of high importance (like documentation practices and standard baseline testing), then start adding in supplemental systems that have high impact (like sleep surveys).

In an ideal world, we'd have access to the best technology with a team of specialists, statisticians, and data science professionals with an abundance of clean data. But for now, we have to start by thinking about how we can set ourselves up for that ideal world.

Athletic Training Resources on the Cutting Edge of Analytics:

[Preventicx](#): Kevin Robell is an Athletic Trainer who has worked to develop a sports injury management and analytics platform with the Pac-12. He has created dashboards that provide visualizations of trends. He has used this platform to identify injury factors more quickly and specifically through the use of targeted questions.

[ATPBRN](#): Another shout out to the ATPBRN. They've designed their EMR (Core AT) with the added feature of incorporating clinical prediction rules. In exchange for the EMR, the team behind this practice-based research network works to identify trends and understand the data better. They will provide reports according to the interest of their participants as a part of the service.

Resources:

1. "Healthcare Big Data and the Promise of Value-Based Care." *NEJM Catalyst*. 2018. <https://catalyst.nejm.org/big-data-healthcare/>
2. Pujpurohit, A. Interview: Bill Moreau, USOC on Evidence-based Medicine to Reduce Sports Injuries. <https://www.kdnuggets.com/2015/03/interview-bill-moreau-usoc-sports-medicine.html>. Accessed August 23, 2019.