

# ***USING DATA TO GAIN A COMPETITIVE ADVANTAGE***



# ***THE CONNECTED ATHLETE:***

## ***THE ROLE DATA SCIENCE PLAYS IN IMPROVING ATHLETE PERFORMANCE***

**The world of sport has always been a numbers game.** In the past, coaches and trainers tracked everything manually, filling journals with the number of sit-ups a player did in a workout and how many touches he had on the ball during a game.

Today, technology has automated much of that work. Thanks to recent advances, strength and conditioning professionals have access to a new wave of performance and movement tracking data that could never be generated or captured before. Information on everything from how quickly players move around the field to how well they sleep at night can now be tracked, measured, and quantified. The sheer volume and variety of information available today makes it easier for data science investments to extract insights and help athletes and teams perform better and stay healthy.

But when we talk about data science, what do we really mean? “It’s the investment in appropriate and advanced uses of data to inform and influence better decisions that can improve an organization,” explains Tim Trussell, Director of Data Science at Kinduct Technologies. “Everybody aspires to compete by having the right data science processes, but not everybody is investing in it strategically.”

The key to understanding the potential of data science is to recognize that it is more than capturing data and looking for correlations or visual patterns within it. Data needs to be ingested into a single location where data scientists can develop and run simulations on specific datasets that give insight to make decisions. Getting data in the right hands of the right people at the right time is crucial to success.

All of this has left many sports organizations with one burning question: How can we unlock the potential of this vast treasure trove of data and use it to maximize athlete performance? Is it really that easy to turn data into a winning formula? The short answer is no. Data science is complex and requires some expertise, but organizations that have the right system in place can be successful.

Enter Kinduct. A software system that centralizes data storage and visualization, Kinduct provides users with the analytics tools to make suggestions surrounding performance and injury prevention.

# ***HOW CAN DATA SCIENCE MAKE ATHLETES BETTER?***

***WE BELIEVE DATA ANALYSIS HAS THE ABILITY TO  
POSITIVELY IMPACT ATHLETES IN THREE KEY WAYS:***

- **Healthier athletes:** Data provides strength and conditioning coaches with great insight into the overall health of athletes. With it, they can visualize important data, such as comparing previous and current workloads to future planned workloads. This gives them the ability to quickly fine-tune sessions to mitigate injuries associated with higher-than-normal exertions.
- **Enhanced team performance:** Healthy players win more games, says Ted Lambrinides, a sports science consultant who works with NFL and collegiate football teams. “Having a greater percentage of your best players on the field or on the court for a greater number of minutes in games, the research shows that you’ll have a better record.”
- **Informed decision-making:** Data takes some of the guesswork out of the game. Armed with insight and a clear understanding of the story data is communicating, strength and conditioning coaches will have more confidence that their decisions are the right ones to get their organization where it wants to go. On a broader scale, player development and talent identification efforts can be aided through the use of data analysis to track athlete progression.

## USING SCIENCE FOR SAFETY

Organizations that take data seriously are seeing results. The National Football League, for example, is using data to enhance safety. Amid growing public concern over player safety, the NFL has made improvements on a variety of fronts by “changing rules, expanding care, analyzing data, and making connections.”

The league’s main focus is on preventing head and neck injuries, as the number of concussions continues to increase. Data released in January 2016 showed that 182 concussions occurred during the NFL’s 2015 regular season—a 58 percent increase over 2014.

Dr. Matthew J. Matava and Dr. Simon Görtz look at the NFL’s attempts to improve player safety in their article, “The University of the National Football League: How Technology, Injury Surveillance, and Health Care Have Improved the Safety of America’s Game.” The authors describe how data science is helping the league improve injury surveillance, treatment, and prevention. Data from all practices and games is collected and analyzed to “assess injury trends” based on metrics like player position, mechanism, and type of play. “As a result of the detail and accuracy afforded by such a comprehensive injury surveillance system, 39 rule changes have been instituted in the NFL since 2005,” they write.

# POTENTIAL PROBLEMS

*UNLESS USED CORRECTLY, DATA CAN CAUSE ISSUES AND LEAVE MORE QUESTIONS THAN ANSWERS IN ITS WAKE.*

*HERE ARE FIVE COMMON PITFALLS TO AVOID:*

- **Thinking data science can solve all problems.** It is a powerful tool, but only one part of a winning strategy. Data science will not replace game and player performance experts, who will always have inherent insights that data alone cannot account for. That is why organizations with winning strategies incorporate both and cross-reference what their experts say with what the data is telling them.
- **Failing to get buy-in from the top.** Organizations that are most successful are the ones that see their data as “a strategic asset” worth investing in, says Trussell. And getting buy-in should be ongoing. Organizations need a way to clearly tell the data story to the leadership team and keep justifying why the group needs to invest in data science.
- **Starting without a clear strategy.** Vast and growing amounts of data in a highly variable sport—players are inconsistent and no team wins every game—make it easy to dive in and find patterns in the data. The best data science game plan is one that considers all the issues—data collection, ownership, and integration. How will data be collected? How will different data sources be integrated? Who is going to own it? How is it going to be used? These are all key questions that should be considered and agreed to by everyone involved.

- **Trying to do too much.** While it is tempting to start analyzing everything, it is best to tackle one challenge at a time, using a data analysis plan that builds on each new insight. Know what your organization is trying to accomplish and proceed from there. An iterative approach that sets realistic expectations and generates insight over time is the key to a successful data science strategy.
- **Relying on faulty sources.** The data you bring into the platform is only as good as it has been collected using a device that has been thoroughly tested and validated. Data sources that have not been validated may show data that looks to be correlated but is just a causation. It is worth making sure that you trust the accuracy and reliability of your data source.

# ***RUNNING THE NUMBERS***

***THERE IS A HUGE UPSIDE TO TAKING THE TIME TO ORGANIZE A DATA SCIENCE STRATEGY. BUT WHAT DOES THAT LOOK LIKE?***

***PLANNING SHOULD FOCUS ON THREE KEY AREAS:  
DATA COLLECTION, DATA ANALYSIS, AND DATA ACTIVATION.***

- **Data collection:** The sheer volume of data can be overwhelming enough. What complicates the situation even more is the diversity. Most organizations have data that comes from multiple sources, such as GPS tracking systems, radio-frequency identification chips, heart rate monitors, and fitness testing devices. All of that information arrives in different formats and ends up in segregated environments, making it difficult, if not impossible, to evaluate and analyze it all. Plus, collecting data for a single professional sports organization, which is in many ways a single silo of athletes, is very different than providing a platform for a group like the National Olympic Organization, which has many different silos of athletes, coaches, and staff.

Obtaining valuable insight from massive amounts of disparate data in multiple places requires a way to consolidate everything into a common platform. That way, it is easier to compare one metric against another and make sense out of what is being seen.

Kinduct achieves this by collecting data through a variety of means, including the use of API's, custom data imports, and direct data entry and storing it in one convenient location. In this way, Kinduct exists as a central repository for athlete information, allowing a sports organization to efficiently view all data collected

in a single location. This gives time back to the team staff because they no longer have to log in to different individual platforms to track different metrics.

- **Data analysis:** Once the data is collected, Kinduct's suite of reporting and analysis tools—along with our key metrics, scoring, triggering, and alerting features—help identify the nuggets of actionable truths from the tsunami of data. However, numbers alone do not tell the full story. Thoughtful analysis and interpretation is required through the use of analytical tools.

On the technology side, organizations and teams need a way to quickly sift through the data, make connections, and display results in an easy-to-understand graphical format. This makes it easier to figure out what data really matters and what story the data is telling. Kinduct provides visuals of data that can alert team staff to changes in athlete data, which if not acted upon, may lead to an unnecessary injury. The ability to capture and be alerted to changes at the single metric level is critical to making the most informed decisions for the good of the club and athlete.

And on the interpersonal side, good communication keeps everyone on the same page. Data scientists, coaches, and strength and conditioning professionals should all know exactly what the organization is trying to accomplish, so they can ask the right questions and find the right answers.

- **Data activation:** Behind the data, there is a call to action. Data scientists need to understand exactly what information the team wants and have the technology to automatically deliver that data when and where it is needed so the team can make actionable decisions. Kinduct has strength/rehab training program tools that can be used to generate programs for athletes—therefore finishing the cycle by taking action on the data.

# ***TOOLS & FEATURES***

***USING DATA TO PROMOTE ATHLETE PERFORMANCE IS IMPROVED  
WHEN APPROPRIATE TOOLS ARE UTILIZED***

***KINDUCT OFFERS A VARIETY OF FEATURES  
TO ENSURE THIS:***

- Multiple stakeholders are able to acquire roles and permissions to share data and collaborate, even if they aren't in the same office, city, etc.
- Kinduct provides a secure web-based platform to keep data secure.
- Each team or organization is assigned a highly experienced Kinduct Client Success Manager (CSM). This person works directly with the team's staff to build their Kinduct platform from the ground up, taking each organization's specific needs into account. CSMs provide assistance to properly onboard and train the team's staff in the early stages to create value, and they also assist with developing an implementation strategy and providing guidance regarding performance data.

# **THE NEXT STEP**

***THE FUTURE FOR DATA SCIENCE IS TO HELP TEAMS IDENTIFY INSIGHTS IN THEIR DATA MORE QUICKLY AND MORE EFFECTIVELY.***

***THE END GOAL IS TO SHORTEN THE AMOUNT OF TIME A TEAM NEEDS TO SPEND SIFTING THROUGH TABLES OF INFORMATION TO ALLOW THEM TO FOCUS ON MAKING THEIR ATHLETES BETTER.***

Kinduct aims to include the use of machine learning and other advanced analytical techniques, seamlessly integrated within the Kinduct platform, enabling teams to glean added insights from their data. For example, presently, alerts are only established based on criteria the team sets. We foresee a future where an intelligent platform can recognize what's important (i.e., outliers, abnormal trends) based on a team's specific needs and bring this information to them so they can take action on the data they ingest quicker.

Those insights will lead to recommended actions to take, influencing critical decisions at the time that is needed. This will be one of the biggest game-changers in data analysis. It will allow Kinduct to take data from the past and present, predict the probability of something happening, and help propose a better future outcome. This will have a profound effect on efforts, such as preventing player injuries by determining the likelihood of an athlete getting hurt before it happens.

“The ones that are continually successful by investing in data science will do so by doubling down to push analytics through the initial hype cycle and continue to fund it and continue to make it a priority,” says Trussell.