

# THE DATA-DRIVEN DIFFERENCE

HOW SPARTA SCIENCE'S  
MACHINE LEARNING TECHNOLOGY  
HELPED THE PORTLAND TIMBERS  
REACH PEAK PERFORMANCE AND  
WIN THE **MLS IS BACK** TOURNAMENT



SPARTASCIENCE



When the COVID-19 pandemic suspended the MLS season in March 2020, it was a disappointment for soccer fans across the country. So when the League decided to resume play with a special MLS is Back Tournament, the announcement received great fanfare. Teams were permitted to resume training in May, with play set to begin July.

The Portland Timbers were motivated. They had not been able to train together in three months and were anxious to get back at it. But for the performance team, this presented a challenge. On the one hand, they had limited time to ensure their players were in game-ready shape. On the other hand, if they trained them too hard too fast, they were at risk for injury.



## ASSESSING PLAYER PROFILES

With a truncated tournament period, all of the usual team needs were intensified. The Timbers could not afford to leave anything to chance.

### INSTANT, UP-TO-DATE ASSESSMENTS

The Timbers first partnered with Sparta Science in 2018, after suffering a well-publicized spate of injuries that consistently took their players out of the games. In a span of two years, the Timbers suffered hamstring injuries at every position. Sparta's patented technology uses force plate hardware in combination with machine learning to provide not only detailed data around an individual's movement, but also insight into areas of risk, such as asymmetry, weakness, or fatigue. It also provides individualized training and exercise recommendations for correcting those issues.

Timbers players completed a jump scan on the force plate weekly, getting an instant read of their Movement Signature, i.e., a visual depiction of how they are currently moving. It's an efficient way for the Timbers' performance staff to profile the players and reach data-driven decisions about training and play. "We've been evolving how we use Sparta's technology every season," says Nick Milonas, Head of Performance. "And over the past three years, it's definitely improved our player availability."

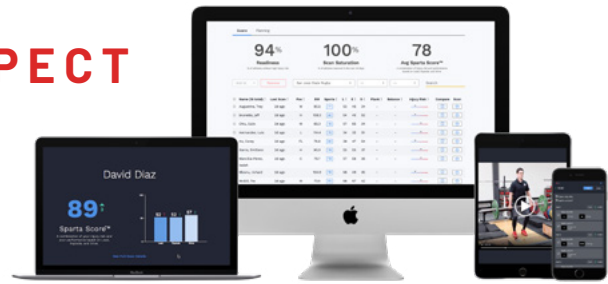
When the players came back from quarantine, the first thing they did were the Sparta scans. It revealed quickly and precisely where they were in their movements, and whether they had new asymmetries or weaknesses that put them at risk for injury. Knowing the players' current status helped the performance team make training decisions for individual players as well as the entire team in the weeks leading up to the tournament.

### BRINGING THE RIGHT TOOLS FOR THE TOURNAMENT

To protect against the coronavirus, the MLS is Back Tournament played out entirely in Orlando, with the teams forming a bubble. Consequently, the Timbers knew they would be there for at least three weeks, so they organized their own micro performance center, including a gym and medical area.

Even still, the travel and space constraints meant there were limitations on what the team could bring with them to Orlando. Every athlete and member of the performance team has their preferred tools and technologies, but the one thing they all agreed on — bringing the Sparta Science system was a non-negotiable.

# DATA FOR EVERY ASPECT OF THE PLAYER JOURNEY



The MLS is Back Tournament was intense. With reduced training time and so many games in a short period of time, it was important to make careful decisions about everything from training, rehab, and readiness to play. The training team wanted to be sure it was putting its players in the best position they could.

Just as they did back in Portland, the Timbers made Sparta part of their routine. In Orlando, each player continued to scan weekly. It was an integral component of their recovery and readiness regimen and provided data for all aspects of their performance.

## **PLAYER MONITORING**

The Timbers used the plank scan during the recovery period throughout the week as part of their ongoing player monitoring. In particular, they watched for signs of shoulder and adductor risk — a particular concern in professional soccer — as well as any asymmetries.

## **PLAYER ASSESSMENT AND ADJUSTMENT**

Leading up to the quarter, semi, and finals, the Timbers would spend the two days prior to games training indoors rather than on the field. The Sparta data was an important tool to make the most out of their conditioning and give them consistency to understand the players and how they were recovering.

The Timbers used the Sparta jump assessment two days before a game to make sure players were achieving movement signatures consistent with their baselines. If any inconsistencies were revealed, the player and staff could spend the next two days making training adjustments, such as different preparation exercises or different treatment modalities. Then the player would scan again to see if there was an improvement. If there was, that provided important feedback that the training stress and / or stimulus on the field was beneficial, and the player was sufficiently recovered to play. In this way, Sparta helped put players in the best position possible leading into a game.

## PLAYER REHAB

Their history with major and repeated injuries taught the Timbers to take injury prevention and rehab very seriously.

The ability to constantly monitor players and get insights into their vulnerabilities and risks helped them keep their injury list to a minimum. When injuries did occur — as they inevitably do — the Timbers relied on Sparta to help shorten recovery time with targeted rehab recommendations and ensure a safe return to play.



The Timbers used all three Sparta scans — balance, plank, and jump — as part of their standard recovery and return to play process. When players had a strong enough score at one stage, they would graduate on to the next. In this way, the performance team and the players had objective metrics to gauge player recovery and could be confident in sending them back onto the field with a decreased risk for reinjury.

## GAME DAY DECISIONS

As the team approached game day, Sparta's data was helpful to the coaches in determining whom to put on the field. In combination with other factors, it let them see which players were fit and in a position to perform their best.

## PLAYER IMPROVEMENT

Sparta was not only beneficial for injury prevention, but also helped athletes reach their peak performance. Sparta's software served as an ongoing benchmarking and guidance tool to continuously improve players' Movement Signatures and overall performance. It gives the performance team the ability to safely test their athletes' capabilities and get a deeper understanding of how they move. Using machine learning, Sparta provides individualized recommendations based on the athletes' data in combination with insights gleaned from over 2 million scans in the Sparta database. Best of all, Sparta's understanding of a given person evolves as they use the software, increasing its value over time.



## THE SPARTA SCIENCE DIFFERENCE

Beyond the core functions of the Sparta software, there were three additional benefits to using Sparta Science that impacted the Timbers and helped carry the team to victory.

### **A COMMON LANGUAGE FOR DECISION-MAKING**

The Timbers take a holistic approach to training, so it's crucial for everyone on the staff to be on the same page. This includes not only the performance team and coaching staff, but also everyone related to sports medicine — the team doctors, physical therapists, and chiropractors. With that many people involved in understanding a player's capacity and strength, they must have a common language. Sparta gave them a uniform basis for understanding and communicating their individual evaluations and analyses with one another to reach better decisions.

It also helped the staff communicate with the players. The staff is tasked with delivering information vital to athletes' play, such as how they're moving at a given point in time, and where and how they can improve. It's imperative that the players understand where this analysis and recommendations are coming from and what it means. Having all of their staff use the scans as the basis for their explanation helps make decisions consistent and comprehensible.



## PLAYER BUY-IN

There's a communication and education component to the Sparta software. The more players are familiar with the software, the more they can start to see the trends themselves. The software visualizes the data well, so their players can see the Movement Signatures firsthand. Players would ask questions: What should my scores look like? Am I on par with where you think I should be? It empowered them to learn more about their own movement and take ownership of their health.

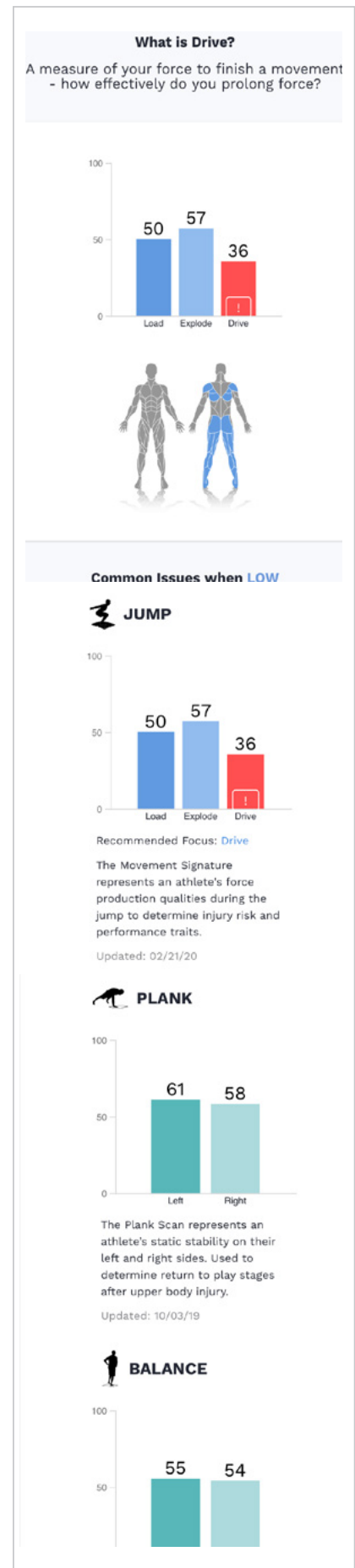
The Sparta app is a great unifier. It is so user-friendly that many of the Timbers players who have difficulty with technology or for whom English is a second language would go up to the laptop, click their name, and start the assessment on their own. And because the data is so clearly represented, they can understand the results and what they mean for them.

Even better, the data fosters a sense of healthy competition. When the Timbers completed their weekly jump scans, it was not an individualized activity. The team would form a semi-circle around the force plate and compete against one another, amping up the motivation to do better. Sparta helps fuel the natural sense of competition among athletes, which means it's not just the performance team and coaches who drive the players' physical improvement.

## SPARTA SUPPORT

Throughout their three years working with Sparta, the Timbers have evolved the way they use the technology, and Sparta, for its part, continues to evolve its offering. Every season Sparta upgrades the software, finding new ways to get more information and ultimately derive greater insights.

As with all technology, the Timbers eventually needed some technical help. In situations like the MLS is Back Tournament, having reliable technical support when they needed it was imperative. Sparta was always at the ready, on call to help the Timbers make the most of the technology and get what they needed when they needed it.





## THE VICTORY

While the Timbers brought Sparta's force plate with them to the tournament, they walked away with another piece of silverware — winning the MLS is Back Tournament trophy, as well as individual accolades, including Player of the Tournament.

Using Sparta Science as part of their overall training and strategy, the Timbers emerged triumphant, beating analysts' odds and earning a berth in the 2021 CONCACAF Champions League.

Just as it had during the regular season, Sparta Science helped ensure player availability and performance. The system's hardware and software provided the right flexibility and were user-friendly for a high-stakes team setting. It's quick, precise, and usable in any environment.

The Timbers always knew how valuable Sparta was to them at home in Providence Park. But after the MLS is Back Tournament, they've learned that Sparta's force plate and machine learning are a non-negotiable when traveling.



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