

KINEXON



Nederlands  
Handbal Verbond

## CASE STUDY

# How the Netherlands Women's Handball Team Mastered the Marriage of Technology and Sports Science

In this case study, we explore the impact of KINEXON's player tracking solutions on the Dutch Handball Federation since the 2021/22 season. The federation wanted to improve load management, match preparation and injury prevention in the Handball Academy. In addition, Maaïke Willemsen wants to objectify metrics to objective training goals for the women's first team.



## DATA

# Using Data to Objectify Training Planning

**Handball is special. As KINEXON sports scientist Michael Elmer pointed out, the sport presents athletes with a multi-dimensional array of challenges. The Netherlands' women's handball team relies on multiple parameters to keep up.**

Injury prevention is among the critical benefits of player-tracking data.

Maike Willemsen and her team focus mainly on jumps, jump load, accumulated acceleration load and high-intensity distance to spot injury indicators.

The reason: they believe those parameters help them capture the high-intensity load athletes need to sustain during training and games.

Combining those metrics not only helps the staff analyze their players' performance. The parameters also lay the groundwork for objectified training planning on three levels: macro, meso and micro.

"Regarding the multidimensional characteristic of handball, we use a lot of parameters. Most important to us, especially for periodization and injury prevention are jumps / jump load, high intensity distance and accumulated acceleration load."

— **Maike Willemsen, Embedded Scientist at Dutch Handball Federation**

Looking at boys and girls separately is another crucial factor for the NHV's Handball Academy at Papendal. It is the only way to gather reliable insights and train young athletes in sync with their physical requirements. Besides the parameters above, the NHV also focuses on the following:

— Decelerations — Number of Accelerations — Sprints — Total Distance

Additionally, the Dutch Federation uses KINEXON live data. That way, it is possible to give coaches live feedback during training. Players seem unexpectedly tired? They fail to reach their preset intensity threshold? Coaches can adjust on the fly.

## INSIGHTS

# Tightening the Data Net to Prevent Injury

**With Handball Academy athletes also working at their clubs, keeping track of their load and performance is complicated. Hence, the Dutch Handball Federation has set out a tight-knit net of metrics to get day-to-day, as well as live-and long-term information.**

During the week, the Netherlands' most talented young handball players train at the Dutch Olympic Training Centre in Papendal. There, the coaches and sport scientist monitor them daily and gather direct feedback to feed into the Academy's athlete-management system.

Through this approach, the Dutch Handball Federation can watch young athletes throughout their Academy career.

Weekends see players return to their clubs to train and play, complicating the federation's performance-monitoring process. However, using KINEXON player-tracking solutions enables the

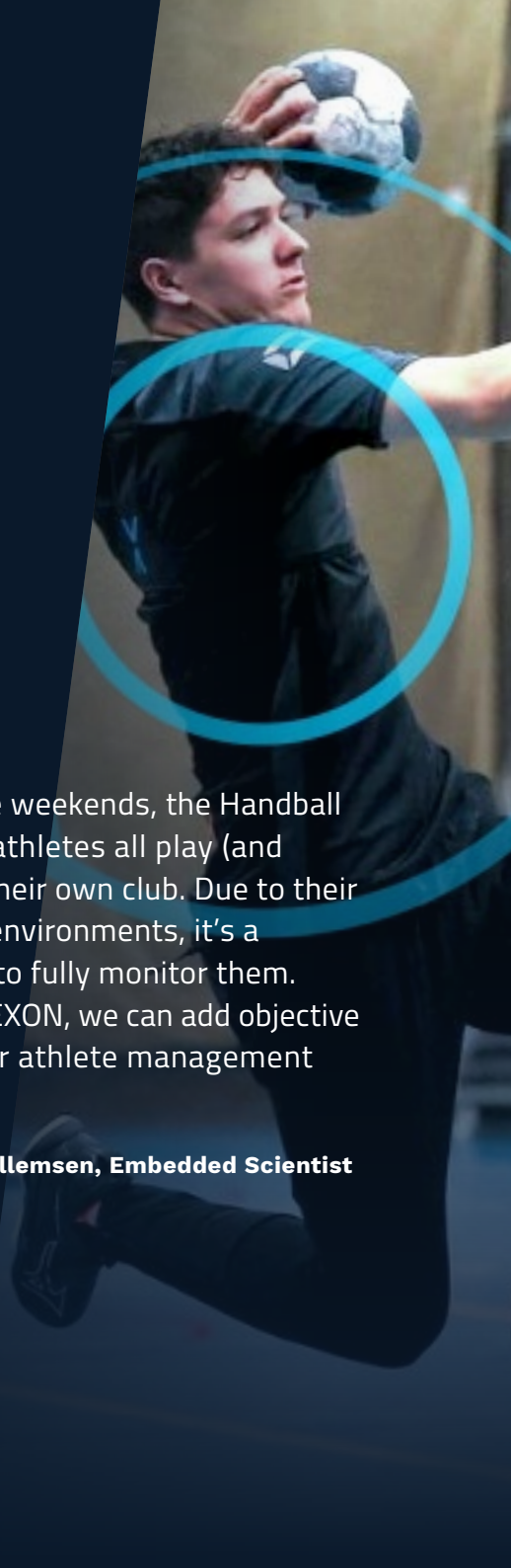
Dutch federation to add objective data to its athlete-management system. The idea: helping the interdisciplinary staff make choices based on objective data instead of subjective information by players and club coaches. To achieve that, they use:

— Wellness — RPE — Playing minutes — A:C ratio

Additionally, combining external factors with internal metrics such as heart rate helped uncover certain misperceptions. Maaïke Willemsen points out that some exercises may seem light from an internal-data standpoint.

Yet, they may include loads of jumps or throws and therefore put a lot of load on the athletes' bodies: an essential insight for injury prevention.

With KINEXON being used by the European Handball Federation (EHF), the Dutch Federation also gets game insights from international tournaments, such as the European Championships. That adds another layer to the tight-knit data net the women are trying to build.



“During the weekends, the Handball Academy athletes all play (and train) for their own club. Due to their changing environments, it’s a challenge to fully monitor them. Using KINEXON, we can add objective data to our athlete management system.”

— **Maaïke Willemsen, Embedded Scientist**

## ACTION

# “True” Values: The Key to Performance Monitoring and Injury Prevention

**Injury prevention and performance monitoring are essential in a multidimensional sport like handball. The Dutch Women’s Handball team uses KINEXON metrics to identify objective training goals.**

Focussing on the metrics mentioned above, Maaïke Willemsen and her team turn to every historical training session. Based on the values, they calculate quartiles to identify what is light (lowest 25%), medium (25-75%) and heavy (highest 25%) load for individual players, as well as for the group.



“Thanks to player-tracking data, we can act on objective TRUE values, rather than just the subjective data. I think especially in a multidimensional sport like handball, this is the key to get in control of the physical development of our athletes – guiding them to reach their full potential.”

— Maaïke Willemsen, Embedded Scientist at Dutch Handball Federation

That way, working out objective training goals for different circumstances is possible. Assuming a player is returning from injury. Then she will work in her light quartile. On the other hand, if the coaching staff aims for a heavy-load week, wing players, for example, have to reach an x-amount of high-intensity distance meters. To gain the insights needed, the Dutch Federation takes gender- and position-specific differences into account.

Using KINEXON solutions for every training session enables the science team to monitor every player’s load. The insights can trigger training adjustments based on periodization or individual training goals and help give feedback and recommendations for the rest of the week to the coaching staff.

The driving force behind all this: guiding athletes to reach their full potential – and thanks to player tracking, the Dutch Women’s Handball team has all the tools to base their measures on objective and, as Maaïke Willemsen points out, “true” values.

## KINEXON

**KINEXON Sports & Media GmbH**  
Schellingstrasse 35  
80799 Munich

info@kinexon.com  
+49 89 200 61 65 0

[Contact here](#)