

## How Uruguay's Leading Pediatric Rehabilitation Center Uses Mocap To Help Children and Teens



Images courtesy of Teletón

"Why did you choose Vicon?"

Because Vicon is a company with a long history in motion capture and life sciences. Ultimately, the software's flexibility allows us to do what we need, and the hardware produces quality, precise data." ~ [Nicolas Peña is Teletón's Gait Lab engineer](#)

Pioneering motion capture since 1984.

## How Uruguay's Leading Pediatric Rehabilitation Center Uses Mocap To Help Children and Teens



In 2012, Teletón Rehabilitación Infantil, one of Uruguay's leading rehabilitation centers for children and teenagers, came up with an idea to help better serve its patients. Using a piece of proprietary software and a handful of cameras, the medical facility decided to record the gaits of its young patients in order to help them gain increased mobility. The team at Teletón learned quite a bit about gait analysis in the process, but they soon hit a technical wall.

Tracking the movements of patients with a range of neuro-musculoskeletal injuries ranging from cerebral palsy to myelomeningocele can significantly increase the recovery time after an operation and help with non-invasive therapies, including various forms of physical therapy. But as with any medical science, it requires precise measurements. "Close enough" is not acceptable when it comes to the health of a patient, so Teletón decided to upgrade its system to include eight Vicon Vantage 5-megapixel motion tracking cameras and the Nexus software.

Nicolas Peña is Teletón's Gait Lab engineer, and he explains how motion capture cameras are being used to help improve the lives of patients, and why Teletón chose Vicon.

### Could you tell us a little about Teletón?

Teletón is a non-profit rehabilitation center that treats children and teenagers with neuro-musculoskeletal diseases to promote their family, school, work and social inclusion. We have two offices in Uruguay – one in Montevideo that opened in 2006, and another in Fray Bentos of the Rio Negro Department – which opened in 2012.

Since its founding, we have managed to help more than 4,000 children and teenagers.

### What led you to gait analysis for your patients?

As one of the leading rehabilitation centers in our country, we have to give the best services to our patients, offering them the best possible solutions. Children with cerebral palsy, for example, often need orthopedic surgery, and gait analysis has shown that the outcome of surgeries improves when understanding the biomechanics of how kids walk. That's why we started this entire project.

### How many people work in the lab?

The team includes two physical therapists, one physiatrist, two orthopedic surgeons and an engineer (me). It is a small team, but one of our main strengths is the teamwork. We do all of our data gathering in interdisciplinary teams.

### What role did Vicon play?

In 2012, we developed our own software for gait analysis with some small motion capture cameras. From that moment on, we started to learn a lot about gait analysis and started studying more and more patients. In 2013, we inaugurated our first Gait Lab, where we only had kinematics. At a certain point, the software limitations, the lack of flexibility for biomechanical modeling and the need for third-party hardware integration started to be an issue.

When it was time to upgrade, we purchased an eight Vantage camera system (5-megapixels), two force plates and an

EMG system. We also started using the Nexus software to calculate kinematics and kinetics through Plug-in Gait, and we also calculate the output angles using a functional model calibration.

We've been working with the new system for a year now, and we are very happy with the results and the possibilities.

### Why did you choose Vicon?

Because Vicon is a company with a long history in motion capture and life sciences. Ultimately, the software's flexibility allows us to do what we need, and the hardware produces quality, precise data. The integration of third-party hardware has also been helpful.

Other leading hospitals frequently use Vicon as well, which is convenient.

### What have the biggest challenges been?

We wanted to make the most out of Nexus, so learning all of the features took a lot of time and energy – not because the software is difficult to use, but because it is very flexible and it lets you do almost whatever you want. The support team helped us a lot with this.

### What have the main benefits of this system been?

It helped to create a more reliable infrastructure and a superior technology base. It has also been a big time saver and helped us avoid repetitive work. Creating our own pipelines and the ability to adapt the user interface has been a huge help as well. It is also nice to work with the world-leading company of motion capture.

### Discover More



facebook.com/vicon  
twitter.com/vicon  
youtube.com/vicon  
instagram.com/viconmocap

[vicon.com/casestudy](http://vicon.com/casestudy)

Denver  
T: +1 303.799.8686  
Los Angeles  
T: +1 303.799.8686

[info@vicon.com](mailto:info@vicon.com)

Oxford  
T: +44 (0) 1865 261800