

## Looking at new ways to improve fitness and performance.

Inclusive Sports and Fitness uses Axis network cameras to help athletes with autism expand their physical, social and emotional skills.



### Organization:

Inclusive Sports and Fitness

### Location:

Holbrook, NY USA

### Industry segment:

Education

### Application:

Child development and safety

### Axis partner:

Contemporary Computer Services, Inc.

### Mission

Inclusive Sports and Fitness (ISF) provides physical fitness and sports performance training to children on the autism spectrum or living with other developmental challenges. Using state-of-the-art sports and fitness equipment and leading-edge neuro and health sciences research, therapists and mentor buddies work with young athletes to increase their social interaction, cognitive-behavioral skills and motor function. When the non-profit moved to a larger facility, a local engineering firm offered to install all the network wiring and a surveillance camera system to secure the new location.

### Solution

Initially, Contemporary Computer Services (CCSI), a New York-based systems solution company and Axis partner, planned to install a couple of AXIS Companion Dome Cameras and AXIS Companion video management software for building security. But after brainstorming with CCSI and Axis, ISF also learned how they could use cameras to visually document their athletes' progress over time.

They asked CCSI to also install several Axis network cameras in the therapy rooms. To complete the setup, CCSI outfitted the lounge area with a large-screen monitor so that parents and caretakers could watch live video of their children engaging in various activities in the fitness center.

### Result

In addition to providing a safe and secure environment for the athletes with autism spectrum disorder, Axis cameras augment the observations made by therapists and mentor buddies, often capturing subtle behaviors that might have otherwise gone unnoticed. Besides serving as a critical assessment tool, the live streaming video gives parents and caregivers the opportunity to observe their children reaching milestones in their social, emotional and physical development without intruding on the therapy session.



## Therapy through sports and fitness

Inclusive Sports and Fitness (ISF) in Holbrook, NY, was founded in 2013 to give children on the autism spectrum a chance to participate in sports and recreation activities just like typically-developing children. Instead of tedious therapy drills to develop hand-eye coordination, cognitive function, social interaction and emotional coping skills, youngsters learn through play. The sports training facility is packed with the kinds of equipment you might see in a university or professional gym – everything from treadmills and basketball hoops to hurdles and stationary bikes linked to scenic virtual reality video screens.

As enrollment in ISF programs began reaching capacity, the non-profit knew it was time to move to a larger facility. To ensure that the new space would be a safe and secure environment for their clients, ISF turned to Contemporary Computer Services (CCSI), a systems solutions company in nearby Bohemia, NY, for help. CCSI proposed installing multiple Axis network cameras and AXIS Companion video management software to help staff monitor the whereabouts of everyone on the premises.

"Children with autism sometimes dart off for reasons unknown to us," explained Alexander Lopez, Founder and Executive Director for Inclusive Sports and Fitness. "With the Axis cameras, we can quickly locate and catch elopers before they hurt themselves."

### Seeing a child through fresh eyes

Lopez finds that most children with autism rely heavily on their parents for social and emotional support and help in regulating their behavior. With ISF, the goal is to create an environment that allows athletes to develop their own sense of autonomy and resiliency.

"When parents are in the room any time a child with autism is unhappy they'll give up whatever they're doing and run to their parents. So whatever gains we're making will be lost," said Lopez.

To discourage an interruption in the therapeutic process, ISF provides a waiting lounge where parents and caretakers can watch live video of the children on a large screen monitor.

"This way parents can see that their children are safe and protected," said Lopez. "But more importantly, it shows them what their child's true performance capacity can be without their intervention."

### Looking for milestones and behavioral triggers

As an athlete progresses through the twelve-week program, the Axis cameras also help therapists assess the child's level of social performance. Reviewing the recorded video from each session reveals whether an athlete is a solitary player, a parallel group participant or engaged in cooperative play.

"We look at the social interactions between teammates as well as their coaches, how well they respond to verbal cues and prompting," said ISF staff member Linda Rini, a certified occupational therapist and graduate student at SUNY Downstate Medical Center.

She tells of one instance where the video captured the athlete cycling backwards on their stationary bike, unbeknownst to the coach who was monitoring several athletes simultaneously. "We looked at how often this was happening, if there was something that preceded the behavior and then we discuss strategies we might use to keep them engaged in performing the exercise correctly."





**“Most parents don’t even realize the capacity of their children with autism to perform without their help. With the Axis cameras we not only show them what they’re capable of today, but what milestones they can achieve over time.”**

**Alexander Lopez, Founder and Executive Director for Inclusive Sports and Fitness**

For Stephanie Hoering, an ISF research assistant and a graduate student in occupational therapy at New York Institute of Technology, the cameras provide a great tool for reviewing an athlete’s social, emotional and physical progress over the course of the program. “All athletes have good days and bad days. So it’s helpful to be able to go back through the video to get a more accurate reflection of their overall performance.”

When coaches are monitoring a roomful of athletes simultaneously, sometimes the camera captures special interactions that the coaches miss – like an athlete initiating a conversation with another teammate or actually tapping a teammate on the shoulder during a relay race, both rare milestones for someone on the autism spectrum. Other times, it’s catching negative conduct like bullying or sitting alone in a corner when the athlete should be participating in a group activity.

“When you’re working with children with behavioral problems, it’s vital that you have tools like the Axis cameras,” said Alexander Lopez. “It’s like having eyes in the back of your head.”

### **Incorporating video into research studies**

Going forward, ISF plans to use Axis cameras in a number of its psychomotor research studies. “We’re starting a research study that uses virtual reality and an exercise bed that moves back and forth,” said Lopez. “We’ll be measuring the athlete’s biometrics – heart and respiration – to determine their level of anxiety.”

Once ISF gets approval from the institutional review they plan to introduce video cameras into the mix.

“The video cameras will allow us to see what the athlete’s psychomotor behavior is like when they’re anxious. Do they fidget and move around a lot? Do they get up from the bed?” said Lopez. “The cameras provide us feedback on how much anxiety they can tolerate and how they deal with it.”

Lopez also plans to use the Axis cameras in his research on how adults with autism respond to novel tasks and activities. “The cameras will help us analyze how they perform a particular task, break that performance down into its smaller parts so we can see where they’re actually having difficulty,” said Lopez. “We want to know whether the problem stems from planning the movement or executing it. Or maybe it’s a matter of not understanding verbal or written instructions.”

### **Training future occupational therapists**

In addition to certified professionals, ISF is staffed by a rotating cadre of graduate students from more than a dozen local universities as well as teens who volunteer as youth mentors.

“The video we capture during our various sessions can be used for teaching purposes as well,” says Lopez. “Having our students watch the way the young athletes are performing and asking them to identify the issues and concerns can help them become better clinicians.”

As ISF continues its research into the science of sports and fitness, its array of Axis network cameras will serve a crucial ongoing role in helping therapists design strategies to help their athletes reach their maximum potential.



# About Axis Communications

Axis enables a smarter and safer world by creating network solutions that provide insights for improving security and new ways of doing business. As the industry leader in network video, Axis offers products and services for video surveillance and analytics, access control, and audio systems. Axis has more than 3,000 dedicated employees in over 50 countries and collaborates with partners worldwide to deliver customer solutions. Axis was founded in 1984 and has its headquarters in Lund, Sweden.

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