



SECOND IN BRAWN, FIRST IN BRAINS

Israelis may not meet the high standards they have set for themselves on the playing field, but they are at the forefront everywhere when it comes to sports technology

Simon Spungin

Wembley Stadium, London. June 30, 1966: the World Cup final between England and West Germany. After 90 minutes of normal time, the score is tied at 2-2 and extra time is being played. Four minutes before the end of the first period, red-headed winger Alan Ball crosses the ball from the right wing and Geoff Hurst shoots from inside the penalty area. The ball hits the underside of the crossbar and drops back down onto the goal line.

The England players start celebrating, the German players protest that the ball never crossed the line. The referee, unsure whether to allow the goal, consults with his Russian linesman, who signals that the ball crossed the line and the goal stands. England goes on to win 4-2 and lifts the Jules Rimet trophy for the first time.

Now imagine that Orad, an Israeli video technology company based in Kfar Sava, had been on the scene. With its Invictus graphic enhancement system, Orad allows broadcasters showing live television events to manipulate the images captured by their cameras and, using highly sophisticated computer technology, to view an incident from every possible angle in real time. If the referee at Wembley that day had access to Invictus, he would probably have denied England the goal.

Second-tier nation

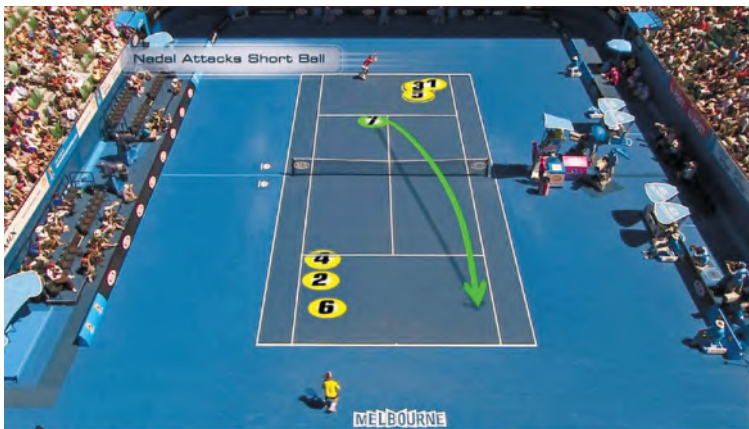
It's no secret that the sporting achievements of Israelis on the world stage have – how to put this delicately? – fallen short of the exceptionally high standards that the country has set in other fields. Israel may boast more chess grandmasters than China,

for example, and may have more Nobel Prize winners per capita than nearly any other country, but when it comes to athletic pursuits, the Jewish state is very much a second-tier sporting nation.

That is not the case, however, in the field of sports technology. With a deep-rooted love of sport and the kind of innovative thinking that brought us such monster hits as Waze, USB flash drives and Rummikub, it is little wonder that Israel is a world leader in sports technology. From broadcasting to clothing, from nutrition to martial arts, it seems that there's hardly any aspect of the athletic world that Israel isn't involved in.

Take Tefron Industries, for example. Established in 1977, Tefron was a struggling garment manufacturer battling to compete with cheaper products from Asia. In 1997, however, Tefron invented the seam- ▶

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Above: Orad's Invictus graphic enhancement system for tennis. The company is based in Kfar Sava. Above left: A similar system for basketball.



less garment and, within five years, was making state-of-the-art sports garments for swimmers and athletes. Now its customers include giants such as Nike and Reebok and, most recently, the company signed a deal to make and distribute garments for award-winning Swiss company XTS, which designs everything from protective suits for cyclists to high-performance socks for runners.

Tefron's success was inspired by economic necessity. The textile industry in Israel was struggling, so the company's owner needed to branch out to survive. Another area in which necessity spurred an Israeli success story is in the field of security and defense. Since its establishment in 1948, Israel has been forced to rely on technological superiority to overcome numerical disadvantage and has developed products – offensive and defensive – that do just that. From machines that detect the odor of explosives to highly advanced radar systems, the Israeli defense industry is a world leader.

So even though the Israeli national soccer team may not be participating in next year's soccer World Cup, which will be held in Brazil, Israeli technology certainly will. Israeli-made drones and unmanned helicopters are already in place; they flew overhead last month as tens of thousands of Brazilians took to the streets to protest the government's economic policy and were used to monitor events at last month's Confederations Cup.

Israeli-made technology has even been used in the construction of the stadium that will host the opening ceremony for next summer's World Cup. Ziggurat Systems provided the companies building the stadium with a \$1 million technological system that highlighted possible design flaws and enhanced coordination between the architectural, engineering and planning aspects of the project.

Flyboys and pucks

Israeli technology has also made a telling contribution to the world of ice hockey, thanks to IntelliGym – software developed by Prof. Daniel Gopher of the Technion – Israel Institute of Technology in Haifa to train fighter pilots in the Israel Air Force. Gopher and his colleagues thought they could train pilots' brains on land, using a cognitive simulator, or "cognitive trainer," to the point where anticipating challenges in flight became completely instinctive. The results were immediate: Gopher's findings showed flight performance improved by 30 percent after using their system.

Following their initial success, Gopher's team demilitarized the technology and soon discovered that, strangely enough, flying a plane was remarkably similar to playing hock-

ey; quick decision-making under pressure, shot selection, anticipation, execution, team work and spatial orientation are all common skills to flying a jet and playing team sports.

Gopher's software is now available for download and use on any personal computer and was part of the training regimen for members of the United States national hockey team, which recently won a bronze medal at the World Championships.

A similar system, developed by former Soreq Nuclear Research Center scientist Dr. Miky Tamir, has been used of late by the San Antonio Spurs. According to Tamir, SportVU uses the same technology that the IDF uses to track and intercept missiles to track the movement of players on the court. Every few seconds, it churns out reams of data about players' positions and decision-making and can be used by coaches to make training sessions more effective. SportVU was also responsible for CNN's so-called "hologram" election coverage in 2008.

A new dimension

Israeli technology is also very much evident in the sports entertainment business. The advent of three-dimensional television was supposed to revolutionize the way spectators watch events in their homes. The relatively high cost of suitable television sets, however, has delayed the arrival of such broadcasts, leaving home viewers frustrated. So Tamir – having sold SportVU to STATS, one of the largest sports data and analytics providers in the world, for an estimated \$15 million in 2008 – founded SterGen and invented the technology to convert two-dimensional video to 3D.

The company has a range of products capable of converting any sports feed into 3D in real time or in post-production and has attracted attention from coaches across the world. During last month's European under-21 soccer championships, which were played in Israel, the coach of the Italian national team visited SterGen's offices to see their product in action and possibly to incorporate it his training methods.

According to Tamir, the future looks very bright for Israeli companies involved in sports technology.

"We're heading in two directions," he says. "The first direction is to make high-quality outside broadcasts accessible to nearly everyone. There are thousands of high schools in the United States which play millions of basketball games every year. Thanks to technology that's being developed here in Israel, every school will be able to afford professional-level broadcast equipment and can stream the games over the Internet."

There's also good news for armchair sports fans, Tamir says.

"The other trend is for more interactivity. Several Israeli companies are developing systems that will allow viewers at home to select which camera they want to watch. They can track a certain player or a specific part of the pitch. The viewer will become the director."

Tamir also has a simple explanation for the large number of Israeli companies involved in sports technology. "As a people," he says, "we love sport. And it beats making cameras that go up people's backsides." ★

07 / TEN TO WATCH

Adam Warner, 23

Nationality: British
Sport: Swimming and open-water swimming
Profession: Athlete
How he got started: While Adam began competitive swimming in 1999, he actually started learning to swim years earlier to help with his coordination. He has ADHD (attention deficit hyperactivity disorder) and mild Asperger's syndrome.

Training: He trains nine times a week, four hours a day, plus two hours of land training a week.

Best achievement: In the pool, Adam broke the British Senior Record for 1,500 meters at the British Gas Masters and Senior National championships in 2013. In open water, Adam captured gold in the 2012 pier-to-pier race in Brighton, coming from the back of the pack to take the lead and win.

Sporting hero: David Davies (British 1500m and open-water Olympic medalist)

Maccabiah: "It's such a prestigious competition, as it is the third-largest sporting competition in the world, and swimmers like Mark Spitz, Jason Lezak and Lenny Krayzelburg went from competing in the Maccabiah to competing in the Olympic Games. It's also an honor for me to represent my country in this competition."

Connection to Israel: I went to Israel in the summer of 2006 on tour with Maccabi GB for one month, to explore the history of the country and visit various sites.

Goal for the games: To win a medal in either 1500m or the open-water 5K.

Most looking forward to: Adam is eager to meet new people, take part in the competition and visit parts of the country he was unable to see on his last trip.

(Simon Spungin)

