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Published: Wednesday, July 19, 2000

Track goes high-tech

From starting block to finish line, new devices can alter performances as well as the way they are measured.

By NED BARNETT, Staff Writer

SACRAMENTO, Calif. -- In a loose, smiling parade, past Olympians walked around the track where the U.S. Olympic Track and Field Trials are being contested. They were older, grayer and certainly slower, but their names still rang with speed and grace, Wyomia Tyus, Willie Davenport, Ralph Boston, Bobby Morrow and other stars of decades past.

But the former athletes who emerged from the late afternoon shadows Tuesday were not returning to the track and field environment they had left. Technology is changing their former sport in ways they wouldn't recognize but likely would welcome.

Computers, digital cameras and advances in wireless transmission are altering the way track athletes run and how their performances are timed and measured.

Perhaps the most noticeable change for the former Olympians, most of whom ran in long spikes on cinder tracks, was what they felt under foot. The 2-year-old track at Cal State-Sacramento's Hornet Stadium is the most advanced form of running surface yet developed.

The brick-red, 400-meter oval consists of two sheets of natural rubber sealed together and laid over asphalt, but the 1/2-inch thick layer is more than a simple pad. The consistency has been engineered to provide comfort for distance runners and hard resistance for sprinters.

The track was made by Mondo, an Italian company that also built the Olympic track in Atlanta and the one that will be used in the Sydney Olympics. But this version of Mondo's \$2 million Super X Performance track has significant changes from the hard and exceptionally fast track Mondo developed for Atlanta.

Mondo's director of track and field, Sam Seemes, who is at the trials playing host to visitors in Mondo's luxury box, said his company may have gone too far in speeding up the Atlanta track.

"We were looking to make a surface with nothing else considered but how you could move a human from point A to point B the fastest," Seemes said. "It was very firm. It had a high energy return. But what we found out that was, although it was a great surface, it wasn't conducive to all events or all athletes."

To adjust, Mondo consulted more than engineers. It brought in experts on the dynamics of human running and adjusted the track design to accommodate runners such as the powerful Maurice Greene in the 100 meters and the slender Elizabeth Jackson in the women's 3,000-meter steeplechase.



Michael Johnson measures his starting block, which has an amplifier and electronic sensors.

Staff Photo By Chuck Liddy

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"It's comfortable," Seemes said of the surface, "but it's also something you can be explosive on."

The new surface is just the start of change in the track and field environment. Large meets like the trials are now held together with a vast but invisible web of electronic signals starting with the starting blocks themselves. If a runner leaves a fraction of a second early, detectors in the blocks send a tone to the ear of the starter, who immediately calls a false start. The detectors also enable officials to pinpoint who jumped the gun.

Wireless signals also allow for instant recording of lap times and finishing times.

The use of wireless transmissions represents a bigger step than it may seem in a nation accustomed to TV remote controls and cell phones. Such everyday devices have delays and interruptions in their transmissions that are insignificant for their uses but could make the difference between a winner and a loser in the hairbreadth timing of races.

"Doing anything in real time is hard to do wireless," said Doug DeAngelis, president of Lynx Systems Developers, a Woburn, Mass., company that developed the starting, timing and scoreboard technology being used at the trials.

Lynx Systems, founded in 1991 by DeAngelis and several fellow graduate students from MIT, has found ways to make wireless transmissions work like hard-wired devices. The effect begins with Lynx's starting block system, but it has its clearest impact at the finish line.

All finishes at the trials are recorded by a digital camera that contains a clock. The image and the time are instantly transmitted. While runners like Wyomia Tyus used to wait to see if they had broken a record, today's runners can look up and see their time instantly.

The digital camera has removed human error as an element in the measurement of performance. Before electronic timing, judges would each watch a lane and then debate who finished first in close races.

"There would be these clandestine, behind-the-scenes arguments," said DeAngelis, a former middle distance runner for the University of Maine. "Eventually, [the judges] all came out unanimous, but who knows how."

At meets where the Lynx system was being used on a test basis while human judges made the call, DeAngelis said, he often saw the wrong runner placed ahead of another. "We've done enough of this work to know that a lot of people have been cheated out of positions," he said.

The Lynx technology extends to the field events, where judges with hand-held wireless computers send back results. Standings are posted on scoreboards after each throw. The change makes a meet much easier to follow since spectators no longer need to wait several minutes for results and standings to be posted. But it has changed the genteel pace of a sport where track officials once acted like tennis or baseball umpires, making calls by eye, conferring and eventually giving their final verdict.

DeAngelis thinks that had to change, given the communication speed people are now accustomed to experiencing.

"For better or worse, [faster results] are a requirement for keeping the sport alive from a spectator's perspective," DeAngelis said. "People want to process the information while what they saw is still fresh in their mind."

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