

Technology

Olympic gear raises the bar

High-tech materials could make athletes faster, higher, stronger

By Joseph Wilson

This month, the world's eyes are on Beijing for the 29th Summer Olympics. Governments and corporations have spent millions to make sure the athletes perform at the peak of their abilities. These days, much of this cash gets spent on research into high-tech materials and equipment rather than on training programs.

Nike is debuting 68 new sports shoes in the Olympics, each one specifically designed for a particular event. Flywire sprinting shoes weigh 67 grams each, 40 per cent less than last year's model. Nike reduced the weight by stitching the shoe together with thin filaments like a spiderweb, then covering it with see-through, super-lightweight fabric.

Nike has even designed a boot for the equestrian events called the Ipeea, complete with adjustable spurs. Each of these boots loses around 4 pounds of metal with the new design. The red-and-white Swift Suit for rowing, used by the Canadian team, is also a Nike product. To reduce drag, the fabric's seams are welded rather than stitched together, in a process more akin to lamination than to needlework.

Adidas isn't far behind Nike. Its Lone Star shoe for American 400 metre racer Jeremy Wariner has spikes that transfer the force in such a way that he has to lean to the left, ideal for an oval track with no right turns. The company has also created a shoe called Adistar Rowing that attaches directly to the shell of the boat, ensuring efficient transfer of energy.

Sturdy shoes are needed for the marathon, and many of the runners look to the Japanese "god of shoes," Asics engineer Hi-to-shi Mimura. He became famous after the rain-soaked marathon of the 2004 Athens Games for his lightweight shoes with soles that grip the pavement in wet weather. This year he debuts his Beijing Special, shoes that are angled forward slightly to improve motion and reduce fatigue.

In the 2000 Olympics, Australian swimmer Ian Thorpe won five medals in his Adidas JetConcept full-body swimsuit inspired by the low-drag skin of sharks. Now Speedo is making waves with new full-body suits dubbed LZR Racers that are giving swimmers drastically better times in practice trials. The suits compress the body's flabby bits, like the upper thighs, to reduce drag in the water.

Adidas is using the same concept in its uniforms for cardiovascular activities like running and soccer. TechFit Powerweb garments compress the runner's muscles in key areas like the lower thighs with Lycra bands, redirecting force more efficiently. Tests at the University of Calgary have shown that athletes get 5.3 per cent more power from their movements and achieved 1.1 per cent faster sprint times – a huge improvement when wins are decided by hundredths of a second.

Oscar Pistorius is perhaps the most famous name in high-tech sports technology. He is the double amputee who's achieved world-class times by running the 400 metre on carbon-fibre "Cheetah" blades in place of his lower legs. His bid to run in the Olympics has sparked a huge debate over how much is too much technological aid for an athlete.

The Court of Arbitration for Sport ruled in May that Pistorius could compete with the able-bodied athletes in Beijing even though his springy artificial legs are seen by some as an unfair advantage. A similar debate is raging over the use of the LZR suits. Since their debut in May, swimmers wearing them have broken 38 world records, but Olympic Committee has decided to allow them in Beijing.

Are we pitching our technologies against each other instead of the prowess of our athletes? Tune in in August to judge for yourself.

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