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Clothes Help Athletes Attain Their Peak

By SANDY SHORE

AP Business Writer

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BOULDER, Colo. -- When he hits Olympic slalom gates at about 50 mph in a few days, American Erik Schlopy will have extra protection in his ski suit, courtesy of some bright orange, waffle-like padding that was first whipped up in a blender.

The material, developed by English engineers and sewn into Spyder racing suits, is designed to be flexible yet stiffen on impact to protect fragile elbows and shins as skiers roar down icy slopes.

"When you're racing and when you're training, you don't really feel that much until after -- when you're looking at the bruises in the mirror," Schlopy said. "I'd have to say the new pads are definitely minimizing the bruises and the blows that we get."

Companies are spending millions on research and hiring engineers specializing in aerodynamics and other sciences in hopes of gaining a product edge. The payoff comes with publicity surrounding the Olympics, especially if the athlete is a medalist.

"If people who are wearing this product seem to be performing better, we're going to be seeing marketing like you've never seen before," said Marshal Cohen, chief analyst at NPD Group Inc., a Port Washington, N.Y., market research firm. "Anything that can help someone get an edge or perform better, an athlete will go to the end of the earth to get it."

Some technology in apparel and equipment seems to boost performance, Cohen said, while other advancements perhaps give athletes a confidence boost.

And the technology that's tested is as broad and as wide as the imagination.

Speedo, for example, mimicked a shark's dermal denticles -- essentially, skin with tiny teethlike features -- by weaving ribbing and texture into first a swimsuit and then a triathlon outfit for recent Summer Olympics. The material, called Fastskin FSII, has been added to outfits for Olympic bobsled and skeleton athletes this winter to reduce drag yet maintain movement.

Each suit is adjusted to fit the specific athlete.

"It also allows them greater freedom of motion and greater flexibility than the traditional sliding suits of the past, which tend to have been thicker and less porous," said Stu Isaac, a marketing senior vice president with Los Angeles-based Speedo.

Speedo suits will be worn by skeleton athletes from a handful of countries, including the United States, and by U.S. bobsledders.

Speedo declined to release Olympics sponsorship details, though the research has paid off with tens of

millions of dollars in retail sales of swimsuits containing the special material, Speedo spokesman Craig Bommer said. Isaac said a retail bobsled-style suit will cost about \$700, but the company does not expect it to become a mass market item.

At Portland, Ore.-based Nike Inc., aerodynamics research helped produce Swift Skin, designed to make uniforms for the U.S. men's and women's hockey teams more comfortable and durable as well as about 13 ounces lighter.

Some inventions come from more personal experiences.

At the d3o lab in Hove, England, the padding that ended up on the Spyder ski suits was conceived on European slopes and developed in a food blender. Chief Executive Officer Richard Palmer said he and his partners wanted to find something that would be flexible, yet protect them when they fell on the slopes while snowboarding.

Palmer uses an analogy to describe how it works: A relaxed person tenses up as he prepares to catch a baseball, bracing for the impact. Once it's caught, he relaxes again.

Palmer believed so much in the technology that he sold his house and put the money toward developing a business to sell it. He estimates it cost several million dollars for research and development, and it took about two years to raise operating funds.

The funny-looking waffle material caught the eye of folks at Boulder-based Spyder Active Sports Inc. They have spent the last year and a half perfecting its placement in race suits, replacing a stiffer foam that inhibited movement, said Phil Shettig, the company's director of product development.

Part of the work involved testing by skiers and marking up the suits to get the padding in just the right place.

"It was incredibly difficult to get these suits to work right for world-class athletes," Shettig said. "If you look at some of these athletes' arms, they look like someone has just taken a baseball bat to them."

He estimates the development cost Spyder about \$70,000.

The padding will be used by skiers on the Canadian and U.S. slalom and giant slalom teams -- all sponsored by Spyder and wearing the company's distinctive suits with spider web lines. Shettig said the material was outlawed by the International Ski Federation for downhill and super giant slalom races because of concerns about potential unfair aerodynamic advantages.

Spyder, a leading high-end specialty ski products company owned by investment group Apax Partners, sponsors the U.S. ski team, the Canadian Alpine and freestyle ski teams, and the Austrian Alpine team. It will offer a commercial race suit for about \$900 and a Stealth undergarment with the d3o material for about \$200.

Michael Holden, a program manager for Cubric hypersonic test facilities in Buffalo, N.Y., helps downhill skiers with form and testing in a wind tunnel.

"Suits have an effect, I think, mentally if not anything else," he said. "Equipment matters, but fortunately it's got to the point now that that sort of thing is less important than the skiers themselves."

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On the Net:

Spyder: <http://www.spyder.com>

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