

# Technology at Paralympics sparks advances and controversy

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Daniel Wagner, from Denmark, celebrates after winning the silver medal in the men's 100m T-42 final at the 2016 Paralympic Games in Rio de Janeiro, Brazil, on Thursday, Sept. 15, 2016. (Antonella Crescimbeni/Penn State University via AP)

Here's how good technology for prosthetic running blades has become.

Greek runner Michail Seitis set a world record for his division with a time of 49.66 seconds in the men's 400-meter final on Thursday. He came in sixth place out of eight runners. The five who finished ahead of him were double amputees.

"Oh, to be bilateral," said U.S. sprinter David Prince, a friend and training partner of Seitis', as he watched the race unfold.

Technology for prosthetics has improved so much that it is actually better to be a double amputee in track and field than a single amputee, says Prince, who lost his right leg in a motorcycle accident.

That pace of development has accented a trend within Paralympic sports. Sometimes better [technology](#) has created a gap between [athletes](#) within the same division—or classification, as it's known at the Paralympics—who have distinctly different levels of disability.

"Last year and this year were really hard for me to stay motivated to actually continue training, because I go into the race knowing that they (double amputees) run faster times and I know I'll get beat," Prince said.

Technology plays a prominent role at the Paralympics, with athletes across a variety of events utilizing different equipment to perform at the top of their discipline.

Tatyana McFadden, the top wheelchair racer at this year's games, is sponsored by BMW Racing and uses a specially designed chair to perform at her peak.

"The technology is amazing," McFadden said after one of her races on Thursday. She added: "It's important in this sport to have that little extra edge."

And more gear is always coming down the pipeline, like a swim cap that alerts a swimmer when a wall is approaching, which is being developed for athletes with visual impairments. Such swimmers are currently tapped on the head by a guide with a long pole.

The athlete-technology partnership was acknowledged in the opening ceremony for the Rio Paralympics when a dancer performed a routine with a human-sized robotic arm as a partner, a piece called "Harmonious Relationship."

The developments are both exciting, and—to Prince—somewhat concerning. He worries that some athletes, such as single amputees like himself, will be left behind.

At the same time, he does not begrudge double amputees for availing themselves of whatever is within the rules.

"I support them going tall," said Prince, referring to the fact that newer blades are longer and can increase the height of runners. "Because if they go tall and start running these ridiculous times, guess what, the IPC has pressure now to address it."



Tatyana McFadden of the U.S. races to victory in the women's 5000m T54 race at the 2016 Paralympic Games in Rio de Janeiro, Brazil, on Thursday, Sept. 15, 2016. She claimed her third gold medal and fourth overall of the games. (Antonella Crescimbeni/Penn State University via AP)

Craig Spence, spokesman for the International Paralympic Committee, said the Rio Games have shown him an increased level of athletic performance. However, he was hesitant to attribute all of it to advances in technology. Training for disabled athletes also is improving.

"I've noticed that our athletes are getting faster, stronger and more agile in every single sport," Spence said. "Whether I put that down to technology, well you've got to look at the facts that our visually impaired athletes are getting faster as well. As are athletes with coordination impairments and they don't use any piece of technology."

Spence said the only stipulation in terms of access to blades or any other piece of technology is that it must be available on the public market.

Prices for running blades vary, but the top-of-the-line options can reach tens of thousands of dollars.

Prince, who won a bronze medal in the 400 in London and finished sixth in the 200 meters in Rio, said the biggest difference that he has seen between the 2012 Paralympics and this year has not been a new piece of technology, but rather the number of competitors who are using the best equipment available.

He also has had conversations with members of the IPC about figuring out competition between single amputees and double amputees. The main question that Prince is concerned with is whether double amputees and single amputees should compete against each other at all.

"The data is inconclusive, but if you have eyes, you can see," Prince said. "It doesn't take a doctorate degree to look at that and say, 'Huh, maybe a bilateral does have an advantage over a unilateral amputee.'"

While Prince acknowledges that it is still possible for a unilateral like himself to beat double amputees, he said when he lines up in a lane and sees a top level double amputee competitor, he knows what is most likely to follow.

With the number of competitors using the top blades on the market larger than ever, and many of those being under the age 25, what could happen over the next four years is a sharp dropoff in the number of single amputees competing in events against bilaterals, the 33-year-old Prince said.

That would be a shame, he feels, and would go against the spirit of the

Paralympics.

"If things progress and we're kept together," he said, "there's not going to be any unilateral amputees running because we won't have a chance.

"In order for the sport to stay legitimate, something has to be done."

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