

# From the hospital to the track, Chris Peterson has helped drive the evolution of racing wheelchairs

"The first couple of years, every day the next chair was better than what I made the day before," the St. Petersburg designer says. "We kept, 'Change this, change that, try that.' "



ST. PETERSBURG — Chris Peterson was still in his 20s when he got interested in wheelchair racing.

It was the early 1980s, and he had left his college computer science studies for a job delivering medical equipment in New York's Hudson Valley. What caught his attention was the idea that people were starting to make wheelchairs specific to certain sports, mainly racing and basketball.

"I gravitated toward that," he says. "It seemed more entertaining than hospital beds and oxygen machines."

It was. Races that started out using barely modified everyday wheelchairs have evolved as Peterson and others made more and more specialized equipment. They now are an elite sport that will be a featured event at next week's Warrior Games in Tampa.

After Peterson started going to races, he met wheelchair racing champion George Murray, who introduced him to a guy in the Tampa Bay area who made racing wheelchairs. In 1985, Peterson moved to Pinellas County to make racing and basketball chairs for that company, though not for long.

"I was real creative," he said, "and I guess there was a little friction between me and the other guy. He didn't want me to be designing." The owner once went on vacation and left Peterson alone, so he made his own chair, which didn't conform to the company's style but did end up in a newspaper article.

In 1986, Peterson and Murray founded a company, Top End, that grew to become a dominant maker of the various sport wheelchairs used at adaptive sports competitions like the Warrior Games, where some preliminary competition began Friday.

"We just made racing wheelchairs at first," Peterson said.

The company had sales of about \$70,000 its first year and \$900,000 seven years later when Peterson sold Top End to Invacare, a global maker of home and long-term care medical products. He stayed on at the company another 20 years to run Top End until 2013.

Two years later, the day his non-compete contract expired, he put up the website for his new company, Carbonbike USA, which is a few miles away from Top End's shop. Carbonbike USA's customer list includes top racers who pedal the company's handcycles with their arms instead of their legs.

Peterson's former company, now known as Invacare Top End, will be at the Warrior Games in a big way, with a rotating staff of 10 mechanics providing free, on-the-spot repairs to competitors.

"If somebody pops a tire, busts an axle, we'll have everything that we need to get them back into the game," said David Monceaux, Invacare's southeast regional manager. "We have a very, very proud record of not one veteran missing a game because of a broken wheelchair."

Invacare is a publicly traded company that's based near Cleveland, Ohio and does about \$2 billion in sales annually. Top End is one of its smaller divisions, with about \$3 million to \$4 million in sales across 12 product lines. Top End still does its manufacturing in Pinellas Park, where it employs 40 people, but it distributes what it makes through Invacare centers as far away as Switzerland and New Zealand. The company has helped out at competitions like the Veterans Games for decades. This year, it also reached out to nonprofits in the Tampa Bay area to help with groups like wheelchair basketball leagues.

Over the years, Peterson, now 58, has made wheelchairs for racing, hand-cycling, basketball, tennis, rugby, ice hockey, cross-country skiing, even water-skiing. As he experimented with design, he watched the sports evolve as the chairs got lighter, safer and more stable at high speeds.

Early on, racing wheelchairs were little different than what a hospital orderly would push a patient around in. They were made of chrome-alloy steel, had four wheels and were short from front to back. That made them unstable and dangerous, especially going downhill at 35 mph.

Designers started using aluminum and carbon fiber for the frames, and incorporating upgrades like wireless shifters and power meters to track the racers' heart rates and output in watts. As rules changed, the number of wheels went from four to three, two in the back and one in the front. Having one wheel in the front reduced rolling resistance and, counterintuitively, improved handling (unlike, say, in a golf cart).

Making the wheelbase longer — most are 70 to 74 inches now — helped with stability, especially going over bumps. The weight of the wheelchairs dropped from maybe 30 to 40 pounds in the 1980s to 18 or 20 pounds now.

"I remember the first couple of years, every day the next chair was better than what I made the day before," Peterson said. "We kept, 'Change this, change that, try that.'"

Racing wheelchairs are lower than they used to be, and the racers sit on their knees instead of with legs in front of them. Still, Peterson said, some racers sit "pretty high" because they're big and they have long arms that they want to use to generate power. To do that, they don't grab the wheels and push. Instead, they wear molded carbon-fiber gloves with a grippy rubber on them and punch the wheels forward.

Perhaps the most important feature, however, is how the chair fits the athlete, "because if the chair doesn't fit you, it's no good," Peterson said.

These days, Peterson's company produces about 100 custom-made wheelchairs or handcycles a year and is on a pace this year to do about \$1.6 million in sales. He offers two models of the hand-cycles and one of the wheelchair. About 80 percent of his products go to racers who are scattered across the globe. The morning of a recent interview, a \$12,000 handcycle on the shop floor was destined for Paraguay. A half-built racing wheelchair on a work table was headed to a triathlete in Mexico. A few days before, a woman from England flew in to be fitted for a wheelchair.

As the gear has improved, so has the competition.

"The product is so cool," Peterson said. "If you watch a really good event, it's pretty dynamic. Wheelchair racing is great. Handcycling, too. Wheelchair basketball, and wheelchair tennis, and even quad rugby — at a high level they're fantastic sports.

"All the sports have changed dramatically, too, with the training, the coaching. It's not a party anymore, which it used to be."