

# He's the Army

## Army Vet Is Wheelchair Tech Pioneer

Life sometimes takes hard, swift, unexpected turns. And then life sometimes opens pathways to new frontiers. Former Army Sgt. Rory Cooper knows all about that.

Cooper's life took such a turn in 1980 while he was assigned as a civil affairs NCO in Germany. An avid runner who competed for the U.S. Army Europe track and cross-country teams, he had temporarily taken to bicycling for his workouts while rehabbing a minor injury.

One day while he was out riding, "I was sideswiped by a bus. Then hit head-on by a truck." The collision severed Cooper's spinal cord, caused massive internal injuries and put him in a wheelchair for good.

Some people might have fallen into despair and decline. But after a lengthy recovery and adjustment to his vastly altered circumstances, Cooper turned that tragedy into a launch pad for a vital new career that has improved, and continues to improve, the quality of life for innumerable other severely disabled veterans.

Cooper, now 57, is a professor and scientist at the University of Pittsburgh's Human Engineering Research Laboratories (HERL), which he founded in 1994 as a collaborative partnership between the school and the VA.

He's considered one of the nation's top developers of mobility engineering for the disabled, with 20 patents awarded or pending, and HERL's staff of about 70 is conducting dozens of clinical studies in eight customized labs.

It all began when Cooper, after recovering from his injuries, decided to use his military education benefits to go to college and study engineering. Along the way, he discovered biomedical engineering. "I fell in love with it," he said. "That was a turning point."

Eventually, Cooper gained a Ph.D. and took a biomedical engineer position with the VA in Pittsburgh. And his life's calling came into focus. That VA job "gave me the understanding that you could develop technology for wounded warriors and make that a career," he said. Cooper's goal was to "bring together all the disciplines involved in rehabilitation—doctors, engineers, nurses, therapists, counselors, statisticians, even some businesspeople."

The array of initiatives pursued by HERL today is broad and deep. A primary focus has been addressing common physical problems caused by manual wheelchair use—repetitive strain, carpal tunnel syndrome, elbow tendinitis and rotator cuff injuries.

"I think we've done a good job of tackling that, making wheelchairs lighter, spreading understanding that they have to be closely fitted to users, creating devices like ergonomic hand rims," said Cooper, who noted that injuries caused by manual wheelchairs have dropped by about two-thirds in the past couple of decades.

Improving the safety and effectiveness of powered wheelchairs through expanded and enhanced controls has been another sweet spot for HERL.

"We've come up with new algorithms to better filter the signals generated by the hand, the chin, the head, to customize the operation of powered wheelchairs for each individual," Cooper said. "That's helped to almost triple the number of powered wheelchair users since 1999."



Former Army Sgt. Rory Cooper

University of Pittsburgh Medical Center

HERL research focuses on brain-computer interfaces and new sensing technologies for powered wheelchairs, to include autonomous, self-driving technology that responds to voice—and even thought—commands.

In addition to his pioneering work at HERL, Cooper remains an avid athlete. "I really believe in the Soldier for Life concept, how important it is to stay fit," he said.

He has participated in the National Veterans Wheelchair Games every year since 1983, earning more than 150 medals to date. "It's the one week of the year when being in a wheelchair feels normal," he said. "Being around 600 other disabled vets ... the camaraderie is great."

He also won a bronze medal competing for the U.S. team in the 1988 Paralympic Games in South Korea, and served on the team's sports science staff for the 1992 and 1996 games.

And he has stayed close to the Army. He serves as a Civilian Aide to the Secretary of the Army for the Southwestern Pennsylvania region.

Cooper has a heartfelt message for other disabled soldiers: "Life goes on. You have to adjust to a new normal, but you can still have a wonderful life. Rely on those soldier skills—adapt, constantly learn, focus on your mental capabilities, focus on the physical capabilities you still have.

"Turn adversity into advantage, and turn action into accomplishment."

—Chuck Vinch