

# Amputees Become Athletes with Prosthetic Devices

**Carlos Gonzalez swung a red boxing glove at his trainer's jaw. As he reared up for another punch, he pivoted on his right leg - a jointed, silver pole attached to a sneaker.**

Seven years ago, a shooting left Gonzalez with a wound that forced surgeons to amputate his leg to mid-thigh. He became one of almost 2 million people in the United States who have limb loss because of vascular disease, trauma or cancer.

When he stood on his first prosthetic leg, he just wanted to walk again. But he soon grew frustrated by its limitations and moved to a new generation of prostheses that has placed Gonzalez, 32, among a growing number of amputees worldwide who are running marathons, bicycling and swimming, sometimes faster than competitors with fully intact limbs.

Twenty years ago, the Paralympic games drew 3,000 disabled athletes to compete in 16 sports. Last summer, in London, 4,200 athletes competed in 20 sports, including track and field, rowing, wheelchair rugby and power lifting.



At the University of California at San Francisco, physical therapists plan to hold the first clinic of what they hope will become an annual event intended to help amputees become athletes. The workshop will teach students to sprint, kick a soccer ball, shoot hoops, play flag football and climb rocks on a wall among other activities.

In 2010, Gonzalez acquired his current prosthesis, a marvel of advanced medical technology. The knee contains a computer chip that automatically adjusts to the weight, distance and speed he puts into each step.

The change has given him the energy to rediscover boxing, a childhood passion, and pick-up Jujitsu. Moving will never feel natural again, but he's falling back into the swing of things.

Until now, professional nondisabled and disabled athletes have mostly competed in separate events. But increasingly, those walls are crumbling, said Matthew Garibaldi, director of UCSF's Orthotics and Prosthetics Center.

Over the past 15 years, modern prosthetic components - electronic technologies, plus materials such as advanced plastics and carbon-fiber composites - have put athletics within reach for people who have lost a limb.

"It's mimicking natural body mechanics in a far greater degree of accuracy than they have ever seen." said Garibaldi, "I'm not an amputee runner, I'm a runner who happens to be an amputee."