The healing power of video games

Therapists are getting graphic results by using virtual reality.

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DAVID M WARREN / Inquirer Staff Photographer
An out-of-wheelchair experience: At Voorhees Pediatric Facility, Ashawn Brewer's movements guide virtual car.

"OK!"

Ashawn Brewer powers his Formula One racer onto the track. He almost loses it on a fast curve but - yes! - he recovers with a hard swerve to left. Some wise guy throws a watermelon in his path and he outmaneuvers the mess, only to find a purple speedster blocking his lead. No problem; a butt to the fender, and Mr. Purple is out of there.

Ashawn beams.

"I like it when I run the other cars off the road," he says.

Sharp driving for a 7-year-old - and his wheelchair has nary a scratch on it.

Ashawn does his racing at the Voorhees Pediatric Facility for special needs children, one of a growing number of health, education and youth programs using virtual-reality games and programs to achieve a varied array of goals.

On any given day, Ashawn and his friends at the pediatric center, most in wheelchairs, play soccer, volleyball, ride snowboards or collect treasure under the sea in the virtual world. They actually see themselves on the screen, as opposed to a generic character as in the popular Nintendo Wii. And because they need to move their bodies, not just a game controller, to play, what looks and feels like fun is actually physical therapy.

"It's in a play setting, so it doesn't seem as tedious to them," said Frank DiBacco, a recreation therapist at Voorhees Pediatric.

Interest in the therapeutic use of virtual reality is on the rise.

After a lot of attention in the early 1990s, the excitement hit a lull, according to James Westwood, a program coordinator at the 15-year-old Medicine Meets Virtual Reality conference, an annual gathering of doctors, scientists and computer experts. But, he added, the interest is resurging with the development of actual products.

"The serious games stuff is growing, and growing fast at our conferences," Westwood said.

Much of the development is at universities, with systems too expensive to be available to clinical patients at the moment. But that, researchers say, likely will change over time.

"It's certainly emerging as one of the new technologies of interest," said Judith Deutsch, director of the Research in Virtual Environments and Rehabilitation Sciences Lab of the University of Medicine and Dentistry of New Jersey.

Some studies show promising results.

Deutsch's lab helped develop the Rutgers Ankle Rehabilitation System in which stroke patients use their feet to navigate through one of two virtual worlds, an airscape and a seascape.

"We find they try longer. They improved more," Deutsch said. "They actually walked faster than the group that didn't use the virtual reality."

I-C-Me, the commercially available virtual program used at Voorhees Pediatric and many other institutions, was developed by a Bensalem-based company, VTree Inc.

Chuck Bergen, company president, worked for the U.S. Navy as a software designer for 19 years. He made his first game, a roller-coaster simulator, to amuse himself and his colleagues. "It hit me if I was a child in a wheelchair, this would be phenomenal," said Bergen, who admits to playing his own games.

Bergen also developed City of Life Skills, a virtual program that allows patients to learn how to manage their way through a simulated cityscape before they tackle the real thing. I-C-Me, which

also lets patients play musical instruments and pop magical balloons, has been used by disabled children and adults for therapy and rehabilitation, as well as by autistics to help them learn social inclusion.

Katie Leach, overnight camp director at the Variety Club of Philadelphia Camp and Developmental Center in Worcester, Montgomery County, said I-C-Me has been a hit with her campers.

"The kids enjoy it because they don't get to do those things," Leach said. "It's kind of like they're in their own video game."

Cathy Adams, special education coordinator at the Philadelphia Academy Charter School, has found it useful with autistic students, as well as others.

"I think it's the wave of the future to do more and more things with virtual reality," said Adams. "It's even a sneaky way to get therapy in."

Occupational therapists at Children's Hospital of Philadelphia and Magee Rehabilition Hospital have found the game popular with patients.

"There are definitely some patients who get bored of the same thing or they are depressed because of their condition," said Mary Ann Palermo, an occupational therapist at Magee. "We bring them in there and you see them really engaged in it. People are laughing when they use it."

Nevertheless, people in the field say the therapeutic use of virtual reality merits more study. Others note it's an aid to conventional therapy, not a replacement.

Some benefits seem more than virtual.

Hunter G. Hoffman, director of the Virtual Reality Analgesia Research Center of the University of Washington, wanted to see if virtual reality could help distract burn victims from their often excruciating pain. They created SnowWorld, a game in which the player glides through a virtual canyon, lobbing snowballs at penguins, snowmen, igloos and robots.

Patients who were medicated as usual reported less pain, Hoffman said, and tests showed less pain-related activity in their brains.

Hoffman said he and colleagues have also used virtual reality and exposure therapy to help a woman with a spider phobia and people suffering post-traumatic shock from the Sept. 11, 2001, attacks, and terrorist bombings in Israel.

For a long time, virtual reality seemed the stuff of hyped-up science fiction. But with advancing science, Hoffman predicted even more breakthroughs.

"Now what's happening," he said, "is the technology is catching up with the hype - and wow!"

Back at Voorhees, Ashawn Brewer has trounced his therapist Frank DiBacco by 8-4 in virtual volleyball. But snowboarding, Ashawn says, is his favorite.

Shifting from side to side in his wheelchair, Ashawn, who has very limited use of his arms and legs, is off - whizzing down, down the mountain. He gets creamed by a tree, but the kid is tough. Before you can say icicle, he's back with a grin, zipping around one rock, then another, ready to take on the virtual world.

Pity the snowman that gets in his way.