

Video-game therapy helping post-stroke patients

Maria Prato, Middlesex County Improvement Authority 5 a.m. EDT May 19, 2015



(Photo: Courtesy of Middlesex County Improvement Authority)

MIDDLESEX COUNTY – The revolution of video games has made immeasurable strides since commercially debuting in the early 1970s.

Now, local researchers are drawing on these games to study and advance a type of virtual-rehabilitation therapy and to improve the lives of individuals suffering from post-cerebral vascular disease, a condition often associated with strokes.

Exploring the full effects of his break-through treatment, Grigore Burdea, Ph.D., a veteran professor at Rutgers University and a maverick in the field of virtual reality, has teamed with two Central Jersey, long-term care facilities — Roosevelt Care Center at Edison and JFK Hartwyck Edison Estates.

“Conventional medicine provides rehabilitation six to nine months after a stroke,” Burdea said. “The justification for this continues to be that it’s basically reached a plateau. But (patients) can, in fact, improve further.”

Under the umbrella of his Highland Park-based company, Bright Cloud International, Burdea is targeting nursing homes’ stroke survivors with this cutting-edge therapy.

“It’s intensive, repetitive training with a purpose,” he said. “It’s also responsible for improving focus, memories, decision-making and reducing depression.”

In initial trials, he’s also seen marked gains among elderly dementia patients.

“Our games, unlike off-the-shelf games, adapt to patients,” Burdea said. “In the past, they have used video games for stroke rehabilitation, but we’re doing it using both hands. There are a whole slew of advantages. When you train the good and the paralyzed arm, it helps build connections between the two lobes (of the brain).”

Another pitfall of conventional medicine is that it typically treats patients from the neck up or the neck down.

“So many different specialties do not take into account the connection,” Burdea said.

During an afternoon session at Roosevelt this month, Burdea and his colleague, Gregory House, Ph.D., embarked on their first tournament, remotely pairing Roosevelt residents with those at Hartwyck. Operating at varying capacities, one player supports the other, he said.

Tucked away in an unassuming Roosevelt room are a large-scale television monitor, various components of a custom gaming system, a BCI BrightArm Duo adjustable, tilted table and an elderly subject. Researchers watched closely as the data streamed in.

With some ease, the patient clutches and intermittently squeezes a small rubber ball attached to a controller that moves in a range of directions along the near-frictionless table, tilted up at 20 degrees. The subject is fixed to the screen, navigating a hang glider through ring after ring. Meanwhile, overhead cameras adapt the game to the patient’s every move.

A modern take on Atari’s Breakout preceded this game, and a version of the memory game followed, all custom designed by Bright Cloud International. On screen, a phantom Hartwyck partner, six miles away, assisted the Roosevelt subject through each maneuver.

Unbeknownst to either player, they are moving their arms 400 to 600 times during an hourlong session, working 10 times harder than they would be in a traditional rehabilitation setting.

“Games become winnable by even those who are low-functioning,” Burdea said. “They feel in control and happier seeing rewards through applause and fireworks. We’re constantly reinforcing, and there’s no surprise the residents like to do it.”

Prior to the tournament, all residents were assessed by an unaffiliated third-party clinician using standardized measurements. This practice will be applied at the close of the tournament to document any progress.

“The measurements are universally accepted, so we’re comparing apples to apples,” Burdea said. “Results show we are able to improve arm function and the brain many years after their stroke.”

For further information on Roosevelt Care Center at Edison, an operation overseen by the Middlesex County Improvement Authority, visit www.rooseveltcarecenter.com (<http://www.rooseveltcarecenter.com/>) or call 732-321-6800. More details on Bright Cloud International Corporation may be found at www.brightcloudint.com (<http://www.brightcloudint.com/>).

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