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May 11, 2015

Video-Game Therapy Making Gains with Post-Stroke Residents at Roosevelt

MIDDLESEX COUNTY – The revolution of video games has made immeasurable strides since first 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, PhD, a veteran professor at Rutgers University and a maverick in the field of virtual reality, has teamed up 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 currently targeting nursing homes’ stroke survivors with this cutting-edge therapy.

“It’s intensive, repetitive training with a purpose,” he explains. “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 Tuesday, Burdea and his colleague, Gregory House, PhD, embarked on their first-ever 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, located 6 miles away, assisted the Roosevelt subject through each maneuver.

Unbeknownst to either player, they are moving their arms 400-to-600 times during an hour-long 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 adds. “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, log onto www.rooseveltcarecenter.com or call 732-321-6800. More details on Bright Cloud International Corporation may be found at www.brightcloudint.com.

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