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Better Health Through Behavior Change

Virtual Reality Gaming: Not Just for Kids
Patients with chronic back pain report increased mood, less resistance to physical activity after playing games

SAN ANTONIO – Patients with chronic low back pain who played a brief virtual reality game improved their mood and had less fear of moving even as their pain increased, according to results of a University of North Texas study.

The study, "Examining Virtual Reality Gaming for Pain-Related Fear and Disability and Chronic Back Pain," was conducted by Zina Trost, an assistant professor of clinical health psychology, and her research team in the UNT Department of Psychology. The team will present their results April 23 during the Society of Behavioral Medicine's 2015 Annual Meeting & Scientific Sessions in San Antonio.

Low back pain is the second most common reason for visiting a doctor and second leading cause of disability in the United States, resulting in huge healthcare expense and personal suffering. More than 80 percent of people experience back pain at some point in their lives, and about 10 percent develop a chronic and debilitating pain condition. The researchers recruited 30 people who were highly disabled because of their fear of physical activity.

"Return to physical activity is often key in reducing disability; however, some individuals become trapped in a cycle of continued fear, avoidance and pain," Trost said, noting that traditional treatments, like Graded Exposure Therapy seek to challenge patients' fears by having them practice avoided tasks to help them return to normal daily activities. Trost and her research team saw an opportunity to combine such traditional treatments with virtual reality gaming.

"The motivating, distracting and reinforcing—and generally fun—elements of virtual reality gaming seemed like an intuitive way to promote physical activity among individuals who were anxious about moving and hurting themselves," Trost noted.

As part of the study, participants were asked to practice progressively more difficult physical tasks (for instance, reaching for increasingly lower targets) in a virtual environment, while represented on-screen as a digital avatar customized through Microsoft Kinect. Participants' movements in real life were mirrored by the avatar in the virtual world. Participants continuously rated their concerns about pain, movement difficulty and harming their backs. Mood and pain intensity were measured at the beginning and end of the study. Participants also gave in-depth interviews after playing the game.

The results were encouraging and surprising. First, even as the most difficult tasks were practiced, participants' concerns about pain, difficulty and injury showed a marked decline. "We expected to see people's ratings go down as this is the point of graded exposure therapies. But this was the first time we were able to demonstrate this pattern in a virtual environment," Trost said.

Most surprisingly, even though participants' overall pain increased from beginning to end of the study, they were in a better mood at the end than when the study began. Additionally, participants who completed activities while represented as avatars reported less negative mood symptoms (e.g., anxiety and irritability) than control participants who completed these tasks without the gaming interface. To the researchers, these findings suggest gaming may have a unique impact on mood.

Although only a few participants owned gaming systems, response to virtual reality gaming was overwhelmingly positive. Participants noted that after some practice they had little difficulty adjusting to the gaming program. Age did not seem to play a role either; participants were an average of 43 years old, ranging from 25 to 65. Participants expressed specific interest in gaming interventions they could perform at home, keeping track of progress via scores, and in regular contact with clinicians to monitor their progress.

Results will be presented by Trost and her research team at a poster session at 6 p.m. ET on April 23 during the Society of Behavioral Medicine's 2015 Annual Meeting. Trost is a society member. Other authors are Liza Nowlin, Dina Madi, Adam Guck and Madison Davis. The authors report no financial or other conflicts of interests.

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