

A powerful combination: SIUE researchers innovate imagery-assisted virtual reality

by Megan Wieser

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EDWARDSVILLE - “You feel relaxed. You’re calm. You’re ready. You’ve prepared. You’ve gone through your routine. You’re confident.”

After hearing these words repeatedly, and watching himself through 3D goggles walk through his game routine and smash his best hits, Southern Illinois University Edwardsville baseball player Dustin Woodcock has increased confidence in his abilities. He and 21 of his teammates participated in imagery-assisted virtual reality exercises as part of an SIUE research project.

Lindsay Ross-Stewart, PhD, is the leading researcher of imagery-assisted virtual reality in both athletics and medicine. As part of her innovative, applied research, she worked with the Cougars baseball team to study how athletes can use imagery-assisted virtual reality to increase their confidence and performance.

“Imagery is powerful,” said Ross-Stewart. “It’s not just seeing yourself doing something, but feeling and smelling it. It offers the entire five sense and kinesthetic experience of being an athlete, without actually going through the actions.”

Ross-Stewart’s academic career centers on imagery. She is an assistant professor in the School of Education, Health and Human Behavior’s Department of Applied Health, director of the exercise and sport psychology graduate program, and serves as the sport psychology consultant for the SIUE Department of Athletics. With the help of SIUE graduate students and colleagues, she is incorporating virtual reality into her research.

“Athletes who image are more confident, more motivated, have lower negative anxiety levels, and learn their skills and strategies faster,” she explained. “Imagery is effective, because it includes stimuli and response. It’s one skill you can give an athlete that positively impacts many parts of their game.”

“The media has focused on the use of virtual reality training to increase skill in professional and NCAA Division I athletics,” Ross-Stewart added. “But until now, no one has focused on how virtual reality training can affect an athlete’s use of psychological strategies and their overall psychological skill.”

Her research involving SIUE baseball players was a collaboration with SIUE Athletics, exercise and sport psychology graduate student Jeff Price, and SIUE alumni Chris Hawkins and Danny Jackson.

“Not everyone can image, but they can watch film,” Ross-Stewart said. “We put the VR camera on the participants’ heads and recorded them in action. Then, they had the ability to watch that film. But, you can’t film things like being calm or feeling confident. That’s where imagery comes in.”

The program required the athletes to watch video of themselves via a smart phone application in virtual reality goggles. They watched the video from both first and third person perspectives, and practiced a guided imagery script as many as three times a day.

“Each player was able to film themselves hitting or pitching, several ways. We also filmed them with their walk-up music as they walked to the plate. We then created two individualized 30-second imagery scripts for each player that focused on their specific needs, whether that was to feel calm or to approach an action with intense focus.”

The study's results showed significant changes in the players' psychological practice skills, including automaticity, relaxation, self-talk and imagery, as well as psychological performance skills, such as activation and reduced negative thinking.

"It's often said that the game is 90 percent mental and 10 percent skill-based," said Cougars outfielder Jackson Layton, a junior studying marketing. "We used the virtual reality and imagery script before hitting sessions, practice, bed and any other down time. It was a great way to help with the mental aspects of the game."

"This was definitely a unique way to add on to my routine and benefit my play," added Woodcock, a senior psychology major. "It was a cool experience."

The research team implemented the program at a minimal cost, making it an effective tool for a variety of sports teams at both the high school and collegiate levels.

"The virtual reality technology complimented the underlying mechanisms that had already been shown to help athletes," said Price, who also works in Information Technology Services at SIUE. "My primary role has been about real-time troubleshooting. There are always unexpected hurdles when it comes to software and operating systems."

"The major takeaway for me has been the access opportunities mental imagery provides," he added. "In sports, this could mean a backup getting the number of repetitions normally reserved for the starter. This type of technology allows us to distribute beneficial experiences to people who would have been relegated to the sideline in the past."

Now, Ross-Stewart is turning her focus to the medical arena to study the effects of imagery-assisted virtual reality on geriatric knee-replacement patients. She, Price and James Daniels, MD, JD, professor in the Department of family and community medicine, and sports medicine fellowship director at the SIU School of Medicine, have been awarded two grants to support their study, including an \$8,692 STEP grant and a SIU Collaboration Support Grant with \$8,871 from the School of Medicine and \$15,564 from SIUE.

Data collection for the medical research will begin in spring 2018, with assistance from Price, graduate student Dave Velsor and SIUE Undergraduate Research and Creative Activities (URCA) program participant Emily Grahl.

Student researchers are highly valuable research team members, according to Ross-Stewart. Not only do they aid in and learn research processes, but also their worldview is expanded through the experience.

“When students get an opportunity to do research, they start to become more critical consumers,” she said. “They start to see things with a different perspective, not just in relation to a specific topic, but across their education and life. Not only are they building their resume, but they are also gaining a strong understanding of how research has value over opinion.”

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