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Virtual-reality fun leads to real-life improvements in children

High-tech system lets patients mountain climb, snowboard without leaving hospital

CALGARY – Young patients are now able to go mountain climbing and snowboarding – without leaving Alberta Children’s Hospital – with the help of a virtual-reality system designed to assist with rehabilitation and disease management.

IREX (Interactive Rehabilitation and Exercise System) uses green-screen technology to immerse patients in sports or gaming environments. It’s more than just fun: these interactive exercise programs – prescribed by an Alberta Health Services (AHS) physical or occupational therapist – test for and build balance, mobility and endurance. Unlike traditional exercise programs, most young patients can’t get enough of IREX.

“In their day-to-day lives, children are surrounded with computer technology, so it is often hard to get them motivated to do more traditional exercises,” says Dr. Barbara Ramage, Co-ordinator for the C.H. Riddell Family Movement Assessment Centre at the Alberta Children’s Hospital.

“This system is a fantastic way to encourage exercise for these children and lets them play in a very fun computer world that most of them are very comfortable with.”

Games can be customized for each patient. Some can be programmed to work only one part of the patient’s body, such as a thumb after tendon repositioning surgery, or programmed to work the patient’s entire body, which is often needed to rehab after a traumatic brain injury. The system has more than 20 virtual environments.

“Because the system is so easily customized to the specific abilities of the patient, it can be used for a wide range of patients,” says Dr. Ramage.

Activity on the system can be tracked and monitored over the course of the patient’s therapy and treatment, allowing health professionals to see what improvements have been made.

Zachary Klenner is among the patients who use the system. His curved spine, coupled with the effect of cerebral palsy on his arms, make it difficult for the 16-year-old to bring his arms and hands together.

For one hour each week, Zachary plays different games on the system that help him move his arms. In one game, he catches falling coconuts in a barrel he’s holding; in another, he picks up boxes from one conveyor belt and places them on another.

“Those are my two favourite games because they help me stretch out my arms. I get a real good stretch,” says Zachary. “Soon, I’ll be able to get my arms down and by my sides.”

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“It’s a great system for Zachary, and kids just like him, because it’s fun for them,” says Sheri Coady, Zachary’s mother. “The kids feel like they’re playing but they’re really working hard on their therapy and recovery.”

The IREX system, along with the C.H. Riddell Family Movement Assessment Centre, was made possible by community support through the Alberta Children’s Hospital Foundation. The centre uses state-of-the-art motion capture technology to study movement abnormalities in children and adults and to assist clinicians in making treatment decisions for patients with neurological diagnoses.

“Generous community support helps to ensure that children who rely on care from our hospital have access to the latest technology to help them get better and reach their fullest potential,” says Saifa Koonar, Alberta Children’s Hospital Foundation President and CEO.

The Alberta Children’s Hospital Foundation raises funds for excellence in child health, research and family centred care. Through the generosity of donors, the Foundation provides funding for innovative programs, state-of-the-art equipment, advanced medical training and internationally-recognized pediatric research. www.childrenshospital.ab.ca

Alberta Health Services is the provincial health authority responsible for planning and delivering health supports and services for more than 3.7 million adults and children living in Alberta. Its mission is to provide a patient-focused, quality health system that is accessible and sustainable for all Albertans.

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