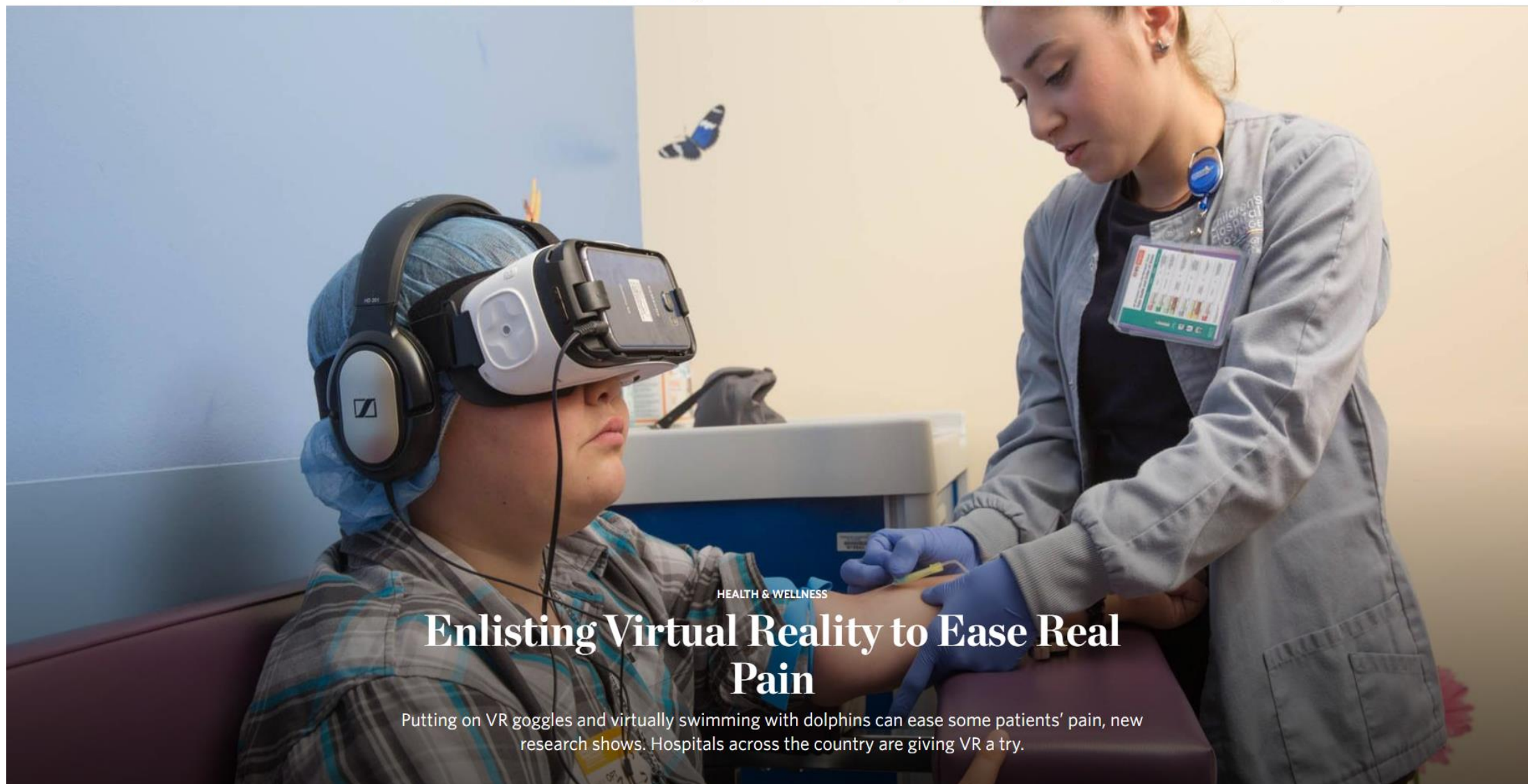


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HEALTH & WELLNESS

Enlisting Virtual Reality to Ease Real Pain

Putting on VR goggles and virtually swimming with dolphins can ease some patients' pain, new research shows. Hospitals across the country are giving VR a try.

Leukemia patient Brandon Taitai, age 15, participates in a clinical trial using virtual reality while having his blood drawn at Children's Hospital Los Angeles. WALTER URIE



By Lucette Lagnado

Updated July 24, 2017 11:15 a.m. ET

In a Los Angeles hospital a short drive from Hollywood, some patients are tapping into virtual reality. But at Cedars-Sinai Medical Center, 3D technology is there not for entertainment but pain relief.

Patients in chronic or acute pain have put on special goggles and traveled virtually through Iceland's waterfalls and valleys, floated among dolphins or meditated beside an idyllic coastline.

Brennan Spiegel, a Cedars-Sinai researcher, says a virtual-reality experience can reduce pain by 24% or more, according to clinical trials he conducted in the past two years. VR eased different types of pain, from cancer to orthopedic injuries to abdominal discomfort.



Dr. Brennan Spiegel with patient Andre Cole-Scott, who received virtual-reality therapy at Cedars-Sinai Medical Center in Los Angeles. PHOTO: CEDARS-SINAI



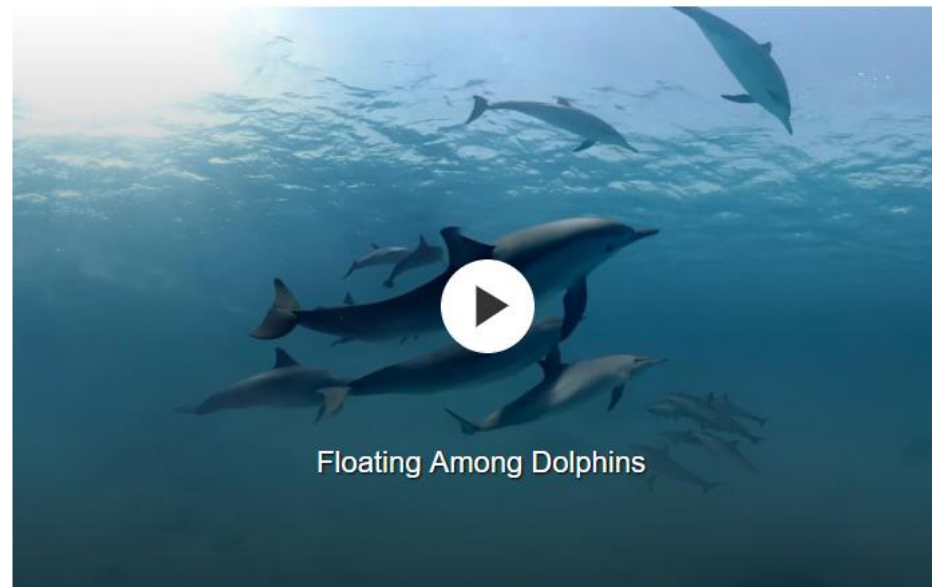
An immersive virtual-reality experience can commandeer a patient's brain so it no longer focuses on pain, says Dr. Spiegel, a gastroenterologist and professor of medicine. "It doesn't work on everybody, but when it works, it really, really works."

At a time when doctors are scrambling to [curb the use of addictive painkillers](#), he and others say VR could be an effective alternative or complementary treatment.

[Virtual-reality technology](#) engages a person in a 360-degree visual experience. It has been used in medical research for more than two decades, to treat trauma, anxiety and even burn pain. The fact that it can now be accessed with headsets and mobile phones is fueling hospitals' interest.






Researchers at the Children's Hospital Los Angeles and Boston Children's Hospital are using virtual reality in studies on pain and anxiety in youngsters and adolescents. NewYork-Presbyterian/Weill Cornell Medical Center in Manhattan recently launched a VR study on patients in its burn center.

VIRTUAL REALITY | 360° VIDEO








 PLAY VIDEO THEN CLICK & DRAG TO LOOK AROUND Watch in virtual reality an underwater scene used in the Cedars-Sinai pain trial. Video: appliedVR/The Dolphin Swim Club [Learn how to watch virtual reality and 360° video on WSJ, with or without a virtual-reality viewer, here »](#)

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AppliedVR, Inc., a private company headquartered in Los Angeles, says it is contributing and lending equipment or funding studies in four hospitals around the country to determine if virtual reality can ease pain and anxiety. The company also has sold virtual-reality equipment to about 100 hospitals. Chief Executive Matthew Stoudt says the firm has created or acquired a library of more than 20 experiences, as the VR scenarios are called.

Virtual reality holds promise in alleviating psychological and physical pain, says Albert “Skip” Rizzo, a psychologist who has run his own virtual-reality laboratory at the University of Southern California in Los Angeles since the 1990s.

“I don’t think we have any illusions that you are going to have open-heart surgery and you are going to slap on the headset and do it without anesthesia,” says Dr. Rizzo, a research professor in USC’s psychiatry department.

But virtual reality can have “dramatic effects” on reducing pain, he says.



Albert ‘Skip’ Rizzo, a research professor in the University of Southern California’s psychiatry department, says virtual reality can have ‘dramatic effects’ on reducing pain. PHOTO: STEPHANIE KLEINMAN/USC

Years back, it was hard even to get funding. “A lot of the agencies thought it was ‘Star Trek,’” he recalls. But the landscape has changed dramatically in the past year or two, and he believes that “clinical virtual reality” will be used more broadly in patient care. In 2015, Dr. Rizzo received a consulting fee of \$1,200 from appliedVR.

“It is Christmas time for virtual-reality researchers,” says Hunter Hoffman, a VR pioneer and research scientist at the University of Washington in Seattle, who has used virtual reality to help burn victims for the past 20 years.

Once upon a time, it was a costly research niche. “We used \$90,000 computers and the helmet weighed 8 pounds,” Dr. Hoffman remembers. Yet it was effective, and he and a

research partner, Dr. David Patterson, used it to ease the pain burn victims felt. They



designed a VR experience known as SnowWorld which was “the antithesis of fire,” and used colors such as white and blue.

“Virtual reality hasn’t been used as widely as it should be,” Dr. Hoffman says. But now, he believes, “we are at the transition phase between research and clinical practice.”

At Cedars-Sinai, patients in Dr. Spiegel’s trials used an \$800 kit consisting of a [Samsung](#) headset and a Galaxy phone to access VR “experiences.” The gear was provided by appliedVR, in partnership with Samsung.

For some of the studies, the experiences included a tour of Iceland’s terrain and a game called “Bear Blast,” where participants shoot balls at animated teddy bears. In another experience—a guided relaxation and meditation session alongside a waterfront—an unseen narrator soothingly intones: “See if you can offer loving kindness to yourself by saying or thinking these words: May I be healthy. May I be happy.”





An image of a serene waterfront from the 'Guided Relaxation' virtual-reality environment that is being used to treat patients' pain. PHOTO: APPLIED VR



A study published in March about a group of 50 Cedars-Sinai patients who were offered the virtual-reality teddy bear game for their pain found “statistically significant and clinically relevant” improvement. Another 50 patients, who were offered a relaxing video with scenes of lakes and running streams, experienced less relief. [The paper, which appeared in the Journal of Medical Internet Research Mental Health](#), concluded that virtual reality “may be an effective adjunctive therapy” for hospital patients. Dr. Spiegel was the senior author.

In a new trial, Dr. Spiegel took 120 patients who were in pain and randomly assigned half to try VR experiences and half to watch a relaxation channel on hospital TV. Preliminary results show a larger drop in pain among the VR group than the TV one, he said.

He now plans to measure whether there was a drop in the patients’ opiate use. Dr. Spiegel says he received a \$1,250 consulting fee from appliedVR and was reimbursed \$889 for transportation; he has no other financial ties to the company. Samsung, in partnership with appliedVR, partially funded the most recent Cedars-Sinai clinical trial.

Ernest “Buck” Shearer, a 40-year-old Cedars-Sinai patient who has endured considerable pain related to Crohn’s disease, took part in a trial last spring and found relief with virtual reality. “It distracts your mind completely,” he says. Mr. Shearer, who says he was on the opioid drug Dilaudid while hospitalized, says he would reach for the goggles during rough stretches between doses of the painkiller. “It helps you get through the hump,” he says. Playing Bear Blast was a welcome distraction. “Once, I played the game and forgot it was time for my pain medicine.”



Andre Cole-Scott, a patient at Cedars-Sinai Medical Center in Los Angeles, was offered virtual reality to help treat his pain. PHOTO: CEDARS-SINAI

JoAnn Difede, a psychologist and professor at NewYork-Presbyterian and Weill-Cornell Medicine, recently began testing VR on burn victims having staples removed after surgery. AppliedVR is funding her pilot study. “Burn pain is extraordinarily difficult to control,” says Dr. Difede, even using opiates.

Dr. Difede, who has used virtual reality to treat trauma victims of the 9/11 attack and in the military, believes in its potential. “There is a lot of evidence it does reduce pain,” she says. She hopes one day “the equipment is in every patient’s room—that VR is as ubiquitous as TV.”

At Children’s Hospital Los Angeles, a trial led by Jeffrey Gold, a pediatric psychologist, offered patients a VR experience—playing Bear Blast—while they had their blood drawn. This simple procedure can be distressing for children who have complex diseases such as cancer. “They have been stuck numerous times and every needle poke is another trauma,” Dr. Gold says. The study involved more than 100 patients ages 13 to 21, some of whom were offered VR, while others were given the usual care. The trial was funded by appliedVR. Dr. Gold says he has been an unpaid scientific adviser to the company and is



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negotiating to acquire options in it.



An image from the Bear Blast virtual-reality experience that is used to help treat pain and anxiety. PHOTO: APPLIED VR

Brandon Taitai has leukemia and has been a Children's Hospital patient since 2014. The 15-year-old says he isn't afraid of needles or having his blood drawn but enjoyed the VR experience. While playing Bear Blast he was "a lot more focused on the game" than on the blood test.

Boston Children's Hospital has been using virtual reality to help calm children before they receive medicine intravenously or undergo endoscopies or colonoscopies. Kate

Donovan, the hospital's Innovation Technology Coordinator, says children like the goggles. "It is a new toy for them," Dr. Donovan says. While the headsets aren't intended for anyone under 13, Boston Children's has offered them to patients as young as 8 whose parents have consented. The hospital is investing in more headsets from appliedVR and wants to study if VR can reduce reliance on pain medicine.

To Dr. Spiegel of Cedars-Sinai one big advantage of virtual reality is that it has no side-effects other than possible dizziness. "The worst that happens is they [the patients] are entertained, but there is very little risk."

Corrections & Amplifications

The Dolphin Swim Club is a virtual-reality experience. An earlier version of this article incorrectly called it the Swim Club (July 24, 2017)

Appeared in the July 13, 2017, print edition as 'A Virtual Approach to Real Pain.'

HIDE COMMENTS (10)

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