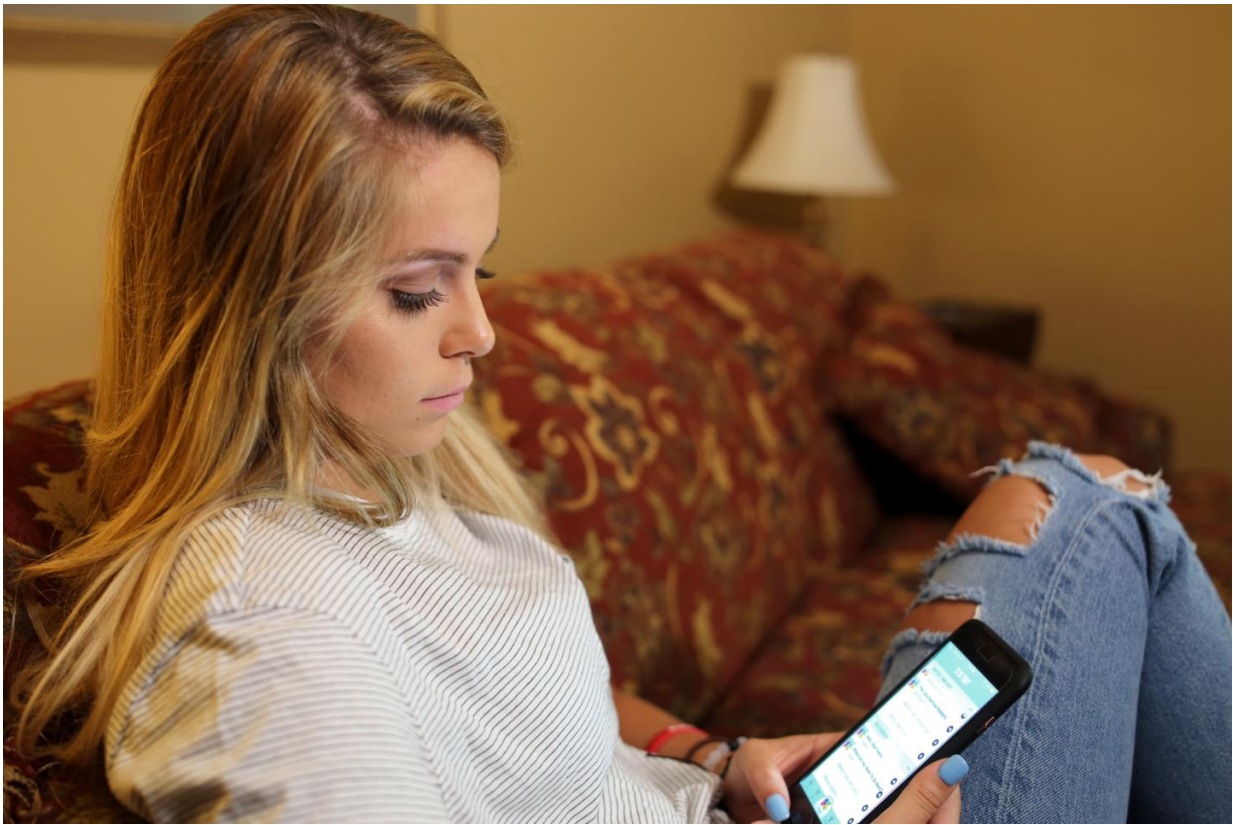


Playing smartphone app aids concussion recovery in teens

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Rachel Butler, 17, of West Chester, OH, uses the SuperBetter app to help her recover from a concussion. A study shows that daily, limited use of the app, which includes useful tips for recovery, improved symptoms in teenagers. Credit: The Ohio State University Wexner Medical Center

Generally, after suffering a concussion, patients are encouraged to avoid

reading, watching TV and using mobile devices to help their brains heal. But new research shows that teen-agers who used a mobile health app once a day in conjunction with medical care improved concussion symptoms and optimism more than with standard medical treatment alone.

Researchers from The Ohio State University Wexner Medical Center and Cincinnati Children's Hospital Medical Center collaborated on the study with Jane McGonigal of the Institute for the Future, who developed the mobile health app called SuperBetter after she suffered a [concussion](#).

Results of the study are published online in the journal *Brain Injury*.

The 19 teens who participated in the study received standard of care for concussion symptoms that persisted beyond 3 weeks after the head injury, and the experimental group also used the SuperBetter app as a gamified symptoms journal.

"We found that mobile apps incorporating social game mechanics and a heroic narrative can complement medical care to improve health among teenagers with unresolved concussion symptoms, said first author Lise Worthen-Chaudhari, a physical rehabilitation specialist who studies movement at Ohio State's Wexner Medical Center's Neurological Institute.

The American Academy of Neurology recommends limiting cognitive and physical effort and prohibiting sports involvement until a concussed individual is asymptomatic without using medication. However, this level of physical, cognitive and social inactivity represents a lifestyle change with its own risk factors, including social isolation, depression and increased incidence of suicidal ideology, the researchers noted.



An app designed to help improve the symptoms of a concussion was shown to have significant benefits when used by teenagers. A recent study found that symptoms and optimism for recovery improved greatly in teens who used that app for a limited time daily, compared to teens who didn't use the app. Credit: The Ohio State University Wexner Medical Center

In addition, cognitive rest often involves limiting screen stimulation associated with popular modes of interpersonal interaction, such as text messaging and social networking on digital platforms, including Facebook, Twitter, Instagram and multiplayer video gaming, thereby blocking common avenues for social connection.

"Teens who've had a concussion are told not to use media or screens, and

we wanted to test if it was possible for them to use screens just a little bit each day, and get the bang for the buck with that," Worthen-Chaudhari said. "The app rewrites things you might be frustrated about as a personal, heroic narrative. So you might start out feeling 'I'm frustrated. I can't get rid of this headache,' and then the app helps reframe that frustration to 'I battled the headache bad guy today. And I feel good about that hard work'."

Concussion symptoms can include a variety of complaints, including headaches, confusion, depression, sleep disturbance, fatigue, irritability, agitation, anxiety, dizziness, difficulty concentrating or thinking clearly, sensitivity to light and noise, and impaired cognitive function.

Within the SuperBetter app, symptoms were represented as bad guys such as headaches, dizziness or feeling confused, and medical recommendations were represented as power ups, including sleep, sunglasses or an academic concussion management plan. Participants invited allies to join their personal network in the app and they could view their in-app activity and could send resilience points, achievements, comments and personalized emails in response to activity.

"Since 2005, the rate of reported concussions in high school athletes has doubled, and youth are especially at risk," said study collaborator Dr. Kelsey Logan, director of the division of sports medicine at Cincinnati Children's. "Pairing the social, mobile app SuperBetter with traditional medical care appears to improve outcomes and optimism for youth with unresolved concussion symptoms. More study is needed to investigate ways that leveraging interactive media may complement [medical care](#) and promote health outcomes among youth with concussion and the general population."

Ohio State researchers W. Jerry Mysiw and Marcia Bockbrader also were involved in the study.

Provided by Ohio State University Medical Center

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