

Learning to see better in life and baseball

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With a little practice on a computer or iPad—25 minutes a day, 4 days a week, for 2 months—our brains can learn to see better, according to a study of University of California, Riverside baseball players reported in the Cell Press journal *Current Biology* on February 17. The new evidence also shows that a visual training program can sometimes make the difference between winning and losing.

The study is the first, as far as the researchers know, to show that [perceptual learning](#) can produce improvements in [vision](#) in normally seeing individuals.

"The demonstration that seven players reached 20/7.5 acuity—the ability to read text at three times the distance of a normal observer—is dramatic and required players to stand forty feet back from the [eye chart](#) in order to get a measurement of their vision," says Aaron Seitz of the University of California, Riverside. For reference, 20/20 is considered normal [visual acuity](#).

In the training game, the players' task was to find and select visual patterns modeled after stimuli to which neurons in the early visual cortex of the brain respond best, Seitz explains. As game play commenced, those patterns were made dimmer and dimmer, exercising the players' vision as they searched.

"The goal of the program is to train the brain to better respond to the inputs that it gets from the eye," Seitz says. "As with most other aspects of our function, our potential is greater than our normative level of

performance. When we go to the gym and exercise, we are able to increase our physical fitness; it's the same thing with the brain. By exercising our mental processes we can promote our mental fitness."

After the 2 month training period, players reported "seeing the ball much better," "greater peripheral vision," "easy to see further," "able to distinguish lower-contrasting things," "eyes feel stronger, they don't get tired as much," and so on.

The players also showed greater-than-expected improvements in their game. They were less likely to strike out and got more runs. The researchers estimate that those gains in batting statistics may have given the team an additional four or five wins in the 2013 season.

The researchers are now extending their work to include different groups, including members of the Los Angeles and Riverside Police Departments and people with low vision due to cataracts, macular degeneration, or amblyopia. They will also apply the same principles to other aspects of cognition, including memory and attention.

It all comes down to one thing: "Understanding the rules of brain plasticity unlocks great potential for improvement of health and wellbeing," Seitz says.

More information: "Improved vision and on field performance in baseball through perceptual learning." Deveau et al. *Current Biology*, 2014. [dx.doi.org/10.1016/j.cub.2014.01.004](https://doi.org/10.1016/j.cub.2014.01.004)

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