

Enhanced vision training boosts batters, research shows

January 20 2012, By Keith Herrell

Members of the University of Cincinnati (UC) baseball team significantly improved their batting performance with the help of an enhanced vision training program, according to research published in a scientific research journal.

The article, "High-Performance Vision Training Improves Batting Statistics for University of Cincinnati [Baseball Players](#)," was published Jan. 19 in [PLoS One](#), a peer-reviewed online publication that features reports of original research from all disciplines within science and medicine.

Five authors collaborated on the study, including baseball Hall of Famer Johnny Bench, the catcher for the Cincinnati Reds' "Big Red Machine" teams of the 1970s.

Additional authors are Joe Clark, PhD, a professor in UC's neurology department; Jane Khoury, PhD, a biostatistician and research associate professor in UC's department of pediatrics; James Ellis, OD, team optometrist for UC athletics; and Pat Graman, a field service professor in UC's College of Education, Criminal Justice and Human Services and director of the Athletic [Training Program](#) at UC.

The work was supported in part by a grant from the National Institutes of Health (NIH).

UC's baseball team, coached by Brian Cleary, competes with 11 other

teams in the Big East Conference. According to the article, following institution of an enhanced vision training program, the UC team batting average improved from .251 in 2010 to .285 in 2011. For the same period, the batting average for the rest of the Big East fell from .305 to .272. Slugging percentage (a reflection of extra-base hits) rose from .372 to .404 for UC but dropped from .456 to .374 for the rest of the Big East.

"We analyzed the results of enhanced vision training performance in multiple ways, and they were highly statistically significant no matter how you slice it," says Clark.

The authors note that concurrent with the institution of the vision training program at UC, NCAA regulations on bats changed, making aluminum bats—predominantly used in college—behave more like wooden bats. Balls hit with an aluminum bat leave the bat with a higher velocity, favoring hitters. As a result of the change, overall batting average for Division I teams in 2011 was .282—the lowest since 1976.

The authors acknowledge that changes in battings statistics can occur for a variety of reasons, including normal improvement as established players mature or new players join the team. They point out, however, that the same situation applies for other teams, and the results for UC were much more positive than the results of the rest of the Big East.

Vision training began in January 2011, six weeks before the start of the season, and continued with a maintenance program during the season. All batters participated, with preseason sessions three times weekly typically lasting 30 minutes and in-season maintenance sessions twice weekly of 20 to 30 minutes. (The maintenance sessions used the same exercises as the preseason sessions but alternated them to provide variety.)

Numerous vision training methods were used, including a Dynavision D2 light board, an eye-hand coordination device that tests and improves visual motor skills by using small board-mounted target buttons that light up randomly. The user is presented with a stimulus and has to locate the light and strike it with the hand as quickly as possible.

Additional vision training methods included a tachistoscope, which trains the brain to recognize images faster; a Brock string (named after its developer, Frederick Brock, OD), which uses a string and colored balls to condition the eye and lens muscles to quickly make adjustments; an Eyeport vision training device, essentially an automated version of the Brock string; a rotation trainer vision pursuit device manufactured by Bernell Corp.; and strobe glasses, which force the brain to visualize where a pitch is going by processing the information it gets from the eyes faster.

"The time it takes for a pitched ball to reach the plate is approximately 0.4 seconds," says Clark. "In that time, the batter needs to spot the pitch, assess rotation and direction of the ball and make a decision to swing or not. Given the time it takes to swing the bat, the batter has only about 0.17 seconds to make that decision.

"We posit in the paper that the vision training program makes the batter better able to spot the ball and the pitcher's finger position and thereby spot pitches better and earlier."

Cleary, entering his 16th season as coach of the Bearcats, says he has no doubt that the enhanced vision training has helped his hitters.

"They have become more capable of recognizing pitches, especially the spin on breaking pitches, and better at being able to quickly study opposing pitchers," he says. "In speaking with our hitters, I've found that they are also believers and insisted that we continue the program for

2012.”

Bench’s involvement came through his friendship with Ellis, Clark says. He visited a training session in May 2011 and spoke to the team about baseball fundamentals, competitiveness and the importance of vision training, then became more involved with the training program. He is quoted in the research paper.

Clark says the U.S. Air Force Academy is the only other NCAA baseball program he knows of that uses enhanced vision training on a scale comparable to UC’s.

The next round of training for UC is under way. The Bearcats begin play for the 2012 season Feb. 17 against Purdue University in the Big East/Big Ten Challenge in Clearwater, Fla.

Provided by University of Cincinnati

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