

# How vision training can turn those ground balls into line drives

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Duke baseball players participated in the study of the effectiveness of the vision training. Credit: Duke University

Athletes are always looking for ways to enhance their natural abilities, and spend hours performing training exercises that build muscle

memory, speed, endurance and coordination.

But exercising the eyes? In a study conducted by Duke Health researchers, a concerted training regimen for the eyes shows the potential to help athletes and others improve coordination skills.

Publishing in the journal *Psychology of Sport and Exercise*, the researchers demonstrate that vision training for a group of college baseball players led to improvements in their batting practice performance.

"This was a first-of-kind study comparing players who were randomized to either undergo dynamic vision training drills or placebo drills that were matched in difficulty, but did not alter vision," said senior author Greg Appelbaum, Ph.D., associate professor in the Department of Psychiatry and Behavioral Sciences at Duke University School of Medicine. "While the study size was small, the methodology was rigorous and we were able to determine a benefit from the intervention compared to the placebo."

Appelbaum and colleagues, including researchers at Indiana University, enrolled 24 collegiate baseball players on the Duke and Indiana varsity teams. About half the players were randomly assigned to undergo regular circuits of vision training exercises that got more difficult as they progressed, including:

- Tossing and catching a ball wearing eyewear that created a strobe effect to improve hand-eye coordination.
- Assessing when a runway of fast, moving lights would intersect from opposite directions in a drill designed to enhance anticipatory skills.
- Using computer screens to track the movement of small targets over space or between screens to build dynamic and binocular

visual skills.

Players assigned to the placebo group performed visual tasks that were designed to be similarly engaging but ineffective, such as doing binocular training exercises with just one eye. Players were unaware of whether they were receiving the active intervention or the placebo.

Prior to and after the vision training program, which lasted 10 weeks during the off season, the researchers measured the players' batting performance during instrumented batting practice and measured the players' visual skills using a battery of digital tasks. In addition, the researchers obtained batting statistics from the players for the NCAA games they played in the season before and after the intervention.

Results demonstrated that the players who underwent the active intervention showed significant improvements in batting practice, hitting the ball further and with a higher arc, compared to those from the placebo group. While no significant improvements were identified in the actual game statistics, the authors said availability of these data were limited, because many of the enrolled players did not play during the seasons before or after the visual training occurred.

"The act of hitting a pitched baseball is widely considered to be among the most challenging activities in all of sports," Appelbaum said. "Our study demonstrates that [vision training](#) can lead to better batting performance. These findings are also likely not limited to baseball and, in fact, could be applied to other sports and activities in which people need to make rapid decisions on visual information such as marksmanship or tennis."

Appelbaum said the research was funded by the U.S. Army Research Office (W911NF-15-1-0390), which has interest in using these training approaches to help soldiers and others maintain visual abilities in high-

demand situations.

"This project is a good example of when Army investments show dual-use benefits for broader society," said Dr. Frederick Gregory, program manager, Army Research Office, an element of the U.S. Army Combat Capabilities Development Command's Army Research Laboratory.

"Supporting rigorous testing of methods that are intended to augment cognitive performance and resilience for the soldier will undoubtedly benefit first-line responders and other members of society who also do very important jobs under pressure."

**More information:** Sicong Liu et al. Dynamic vision training transfers positively to batting performance among collegiate baseball batters, *Psychology of Sport and Exercise* (2020). [DOI: 10.1016/j.psychsport.2020.101759](https://doi.org/10.1016/j.psychsport.2020.101759)

Provided by Duke University

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