

EFFECT OF VIZUAL EDGE™ PROGRAM ON THE PERFORMANCE OF THE
ALMA COLLEGE WOMEN'S VARSITY SOFTBALL TEAM

By

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Doctor of Optometry Senior Paper
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ABSTRACT

Background: This research study explores the effect of a computerized vision therapy program on the performance of the Alma College Women's Varsity Softball team. The computer program used was the VIZUAL EDGE™ program. The evaluation is based on the change in sports performance rather than the change in their visual abilities as measured by the computer program. *Methods:* Members of the team were given the option to use the VIZUAL EDGE™ training program between the 2006 and 2007 softball seasons. Each player's game performance statistics are then compared in order to evaluate the success of the training program. *Results:* The results show that use of the VIZUAL EDGE™ training program may have a positive effect on the fielding ability of the softball players, with their fielding percentage improving by an average of .101 between the 2006 and 2007 seasons. The batting average declined by an average of .007 overall. *Conclusions:* The VIZUAL EDGE™ program may be effective for improving the fielding performance of female softball players, but has not proven effective for improving batting averages.

INTRODUCTION

It has been widely accepted that the visual system plays an integral role in sports performance. Phrases such as “keep your eye on the ball” and “an athlete with great peripheral vision” are now commonplace in the athletic world even among lay people. Baseball and softball especially have attracted a high level of interest in the area of vision and performance. Even as far back as 1925, researchers from the Columbia University Psychology department reported that Babe Ruth had vision that was 12% faster than the average athlete’s.¹ The concept of sports vision seems relatively simple and almost obvious; the eyes feed sensory information to the brain which interprets the information and then sends out the necessary motor signals to accomplish the goal.² It is a much harder task to prove that better visual skills can lead to better sports performance.

Several studies have shown that athletes have superior visual performance than non-athletes. In a study comparing athletes versus nonathletes, Ridini found that athletes had significantly better stereopsis, reaction time and peripheral vision. Falkowitz and Mendel found that among 11-13 year old Little League baseball players, those with better tracking, convergence skills than other players were more likely to have higher batting averages.³ Similarly, Coffey and Reichow determined that athletes under the consideration of the US Olympic Committee for Dynamic Sports had a speed of stereopsis that was significantly better than age matched nonathletes.² The cumulative

information from these studies shows that athletes with better visual skills are more likely to perform at a higher level, but will improving athletes visual skills lead to an improvement in performance?

The current trend in sports vision training is to use specially designed computer programs in order to train and improve skills such as kinetic vision, accommodative speed, vergence ranges and stereo.⁴ Using a computer program for visual sports training is somewhat controversial since most athletes and coaches agree that it is best to practice in the same conditions in which you perform. However, the convenience of a computer program has attracted much interest. Determining if these clinical exercises correlate to playing field performance is challenging due to the innumerable variables present.

Vision therapy has been used for the improvement of visual skills to aid in visual comfort for amblyopic patients as well as patients experiencing asthenopia. A new trend in vision therapy techniques is utilizing a computerized program. These new programs provide consistent sets, rate, and amount of stimulus change resulting in a more consistent experience for the patient and a more reliable basis for information comparison and less variability in treatment results. Previously, vision therapy needed to be performed in office with the aid of a knowledgeable vision therapist. Even with an extremely well trained therapist, the changing of targets is often slow, tedious and unreliable. There is also little standardization of therapy instructional sets, rate, and amount of therapy.² A computerized program allows for a reduction in the variables that may affect the outcome of treatment.

METHODS

The Alma Women's Varsity Softball players were assigned a vision therapy computer program to use for 1 year. It was suggested that the players use the program at least once a week for 30 minutes. The program was kept at the office of James Seals, O.D. in Alma Michigan and the same computer was used for all training sessions. Approximately 15 team members participated, however only 9 were members of the team for both the 2006 and 2007 seasons. The VIZUAL EDGE™ program uses red/blue fusion lenses and random dot figures to train vergence amplitude, vergence speed, stereopsis, accuracy of tracking and tachistoscopic vision in order to improve an athlete's ability to "see" the ball. The efficacy of the program is being determined by the change in performance, as measured by individual player's statistics over the course of the 2006 and 2007 seasons.

RESULTS

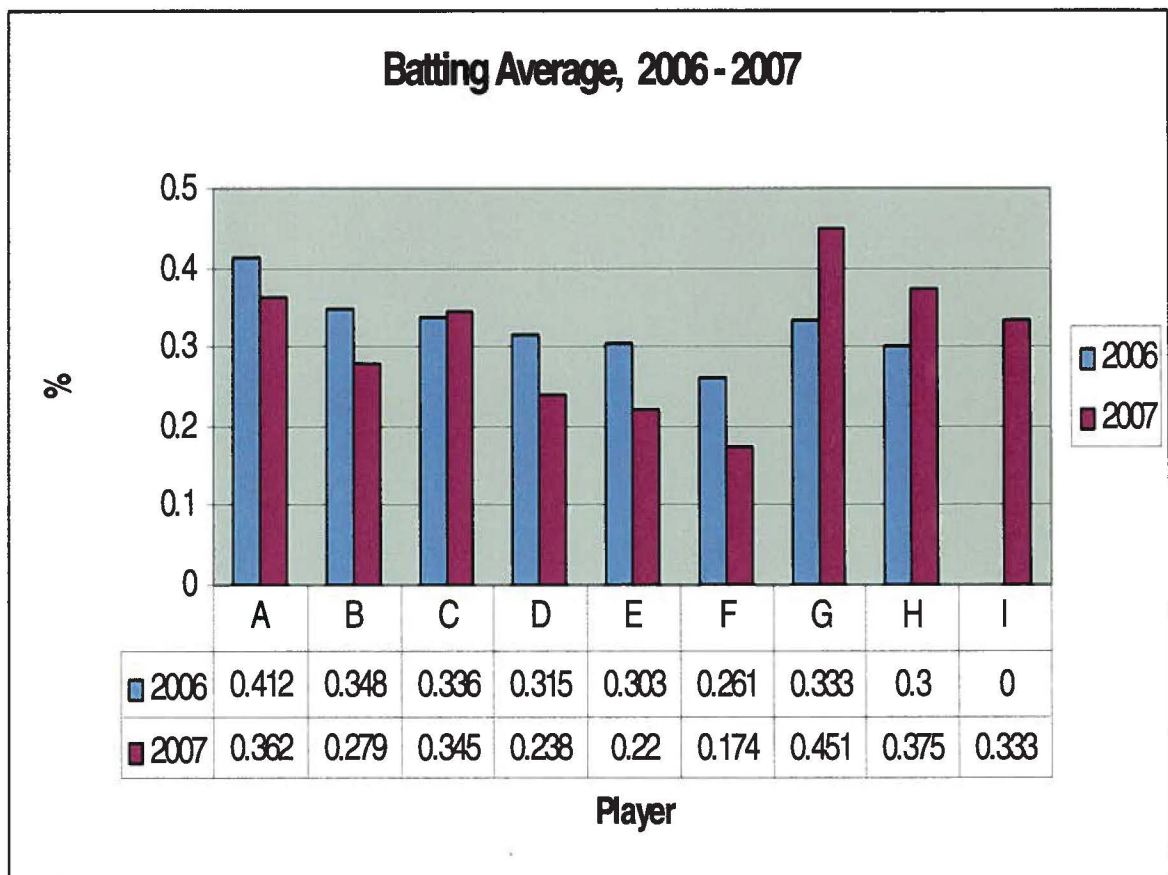
The results were calculated using the statistics from all games during the regular season of 2006 and 2007. There were 39 games total in 2006 and 43 games during the 2007 season. All of the players being evaluated played in at least 75% of the games during both seasons, with the exception being the pitcher's whose statistics differ obviously from the other team members. Each player is identified by a letter, A-K. Players I, J, and K are pitchers, and only player I was given an at bats. Therefore the information in the fielding evaluation is more complete because more players are being evaluated.

Batting average, one of the most common statistics in softball is the first area that was evaluated. Batting average is derived using the equation:

$$\frac{\text{total number of hits}}{\text{total number of times at bat}}$$

Table 1 compares the batting averages of the players over the course of the 2006-2007 seasons.

Table 1



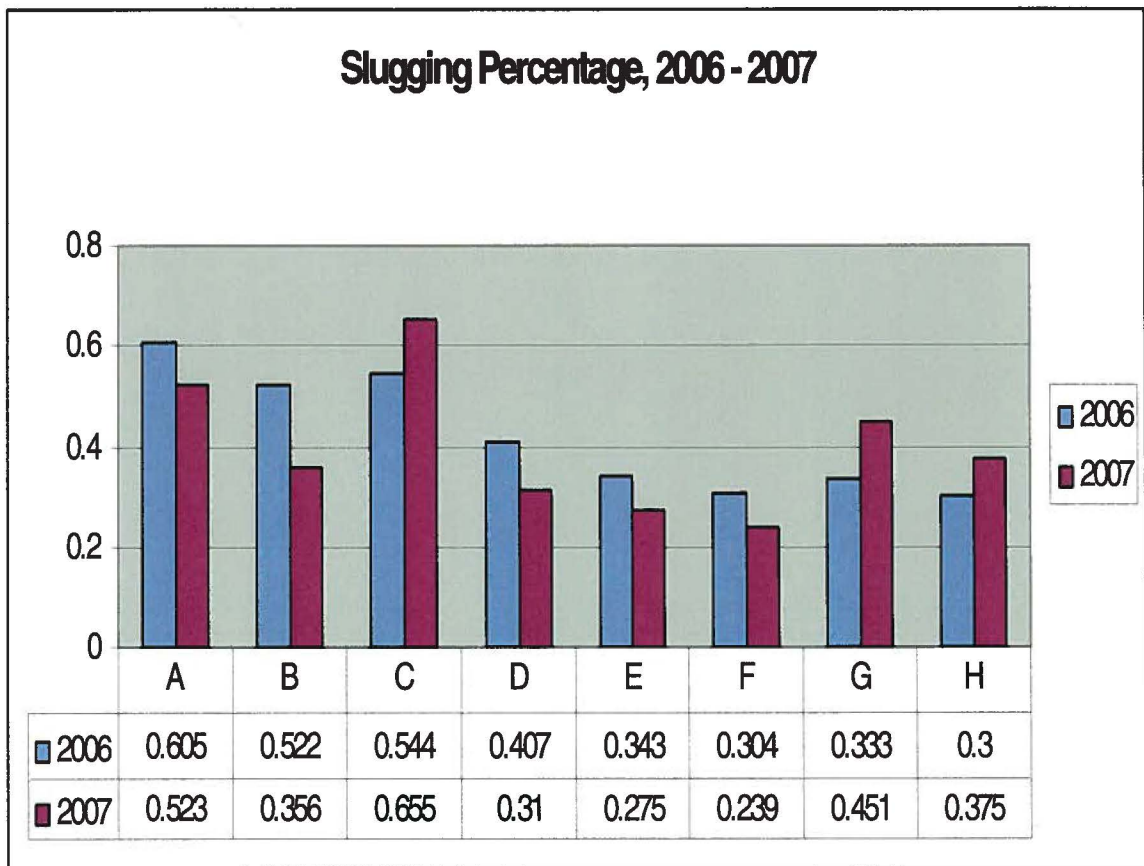
5 of the 8 players whose bathing averages were evaluated showed a decrease. The chart illustrates well that overall the batting average of the team decreased by .007 between the 2006 and 2007 seasons.

Another common statistic is the Slugging Percentage. An offensive ability statistic calculated with the following equation:

$$\frac{[\text{singles} + 2 \times \text{doubles} + 3 \times \text{triples} + 4 \times \text{home runs}]}{\text{number of at-bats}}$$

Table 2 illustrates the change in slugging percentage during the 2006-2007 seasons.

Table 2



The graph shows that during the 2006-2007 seasons, 5 of the 8 players evaluated had a decrease in slugging average. The slugging average declined by .022 overall. This may correlate with the decrease in batting average.

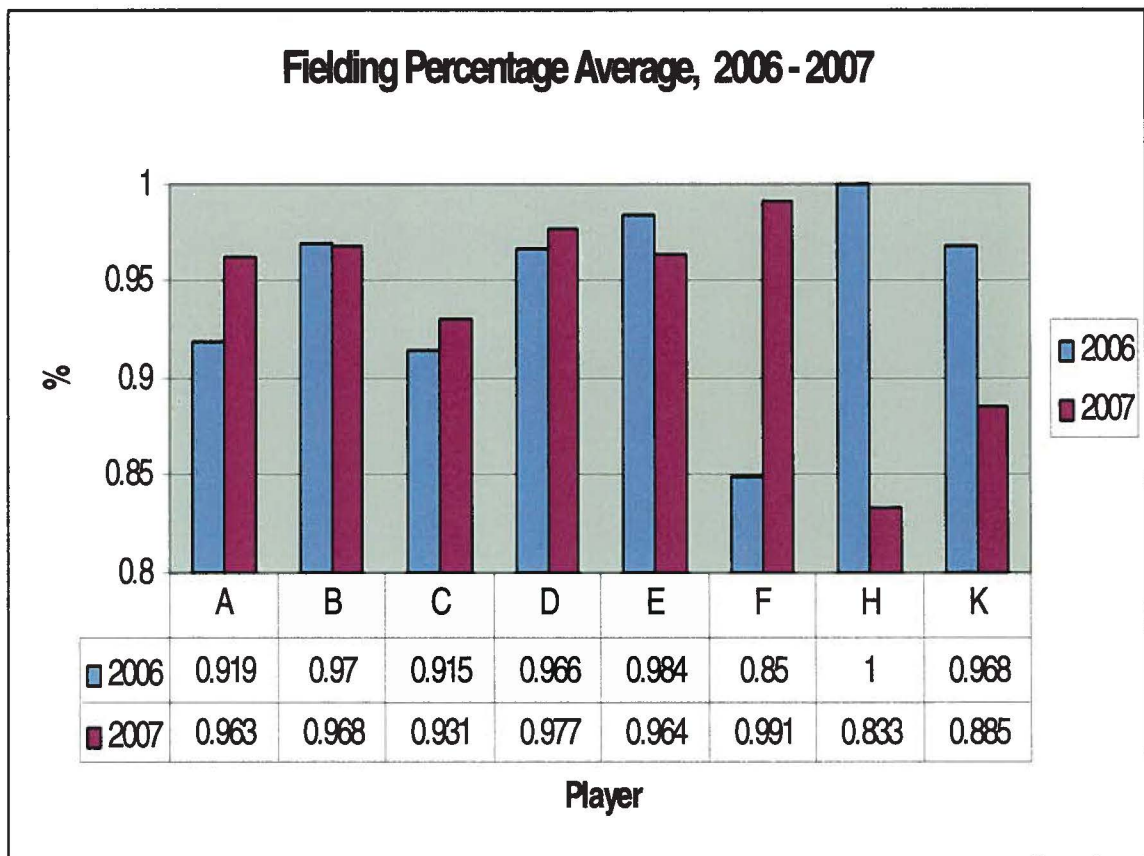
The final statistic used was the Fielding Percentage. This statistic is derived using several fielding statistics and attempts to evaluate the players overall defensive performance.

The Fielding Percentage is calculated with the following equation:

$$\frac{\text{assists} + \text{putouts}}{\text{assists} + \text{putouts} + \text{errors}}$$

Table 3 shows the results of the Fielding Percentage over the 2006-2007 seasons.

Table 3



The chart shows that 4 of the 9 players evaluated improved their fielding percentage.

Overall, the average did increase by .101.

DISCUSSION

The statistical analysis suggests that the VIZUAL EDGE™ program may have been useful in improving the fielding abilities of the players, but did not improve their batting abilities. However, there are still innumerable variables to be considered. The most important variable may be how often the players actually used the program and if they were able to complete all of the exercises during each session. There is no record of which players were more consistent with use of the program. Another variable is the amount of practice and other training the players received. If their training regimen consisted of less batting practices and drills but more fielding exercises during 2007 than it did during 2006, then that may account for the drop in batting and slugging averages. The visual systems of the players were not evaluated prior to beginning this program, so they may not have had the full refractive correction necessary to use the program to its fullest potential.

The final conclusion is that it appears the VIZUAL EDGE™ computer training program appears to be effective in increasing the overall fielding ability of softball players based on the performance of the Alma Varsity Women's Softball team. However, more detailed and controlled information to further determine the effects of this program.

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