

*Is Vision Training
Important for Baseball
Players?*



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1. Vision training as part of conditioning or injury prevention can be applied and may improve batting performance in college baseball players.

Baseball is a sport with a tremendous amount of quantitative batting data being generated from batting averages, slugging percentages, and numbers of hits, walks, strike outs and a host of others (Clark 2012). Batting requires rigorous demands for hand eye coordination requiring concentration and good visual sharpness as well as depth perception. Vision training can be beneficial to various sports related activities but an objective and assessment validating the concept is relatively unknown. The time it takes for a pitcher to throw the ball and reach the plate is approximately 0.4 seconds. In that time the batter needs to spot the pitch, assess rotation and direction of the ball to finally make a decision to swing or not (Clark 2012). When swinging the bat the batter must assess both the timing of the swing and the angle of the swing. The swing takes about 0.2 seconds. With the velocity of action potentials being approximately 60 m/s and approximately 2 mS needed to cross each synapse, and a minimum of 5 synapses crossed that means it can take as long as 0.03 seconds to process the swing (Clark 2012). When the hitter decides to swing, it takes about .17 seconds.

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Clark (2012) observed the traditional vision training as part of injury prevention or conditioning that can be added to a team's training schedule to improve some performance parameters such as batting and hitting. All players for the 2010 to 2011 season underwent normal preseason physicals and baseline testing that is standard for the University of Cincinnati Athletics Department. Standard vision training exercises were implemented 6 weeks before the start of the season. Results are reported as compared to the 2009 to 2010 season. Pre-season conditioning was followed by a maintenance program during the season of vision training. Six weeks prior to the season a thrice weekly vision training session was initiated including: Dynavision, Tachistoscope, Brock String, Eyeport, Rotary, Strobe Glasses, Near Far Training, and Saccades. The Dynavision is a eye-hand coordination device that tests and improves visual motor skills. The Tachistoscope is a device that trains the brain to recognize images faster, and loosely correlates to batting average. The Brock string is a classic visual training aid that uses a string and colored balls. The Eyeport is effectively an automated version of the Brock String that has a series of different colored lights. The rotary is a vision pursuit device that has letters and numbers attached by Velcro. Strobe glasses are LED lenses that flash and completely block the signal to the eyes as objects are in motion. Saccades are rapid movement of both eyes in the same direction from one object to another voluntarily. Near far training consists of the subject focusing on two different cards approximately 18 inches and 10 feet away. The University of Cincinnati team batting average increased from 0.251 in 2010 to 0.285 in 2011 and the slugging percentage increased by 0.033. The rest of the Big East's slugging percentage fell over that same time frame 0.082. This produces a difference of 0.115 with 95% confidence interval (0.024, 0.206)

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As with the batting average, the change for University of Cincinnati is significantly different from the rest of the Big East. Essentially all batting parameters improved by 10% or more. Similar differences were seen when restricting the analysis to games within the Big East conference. Vision training can combine traditional and technological methodologies to train the athletes' eyes and improve batting. Vision training as part of conditioning or injury prevention can be applied and may improve batting performance in college baseball players. High performance vision training can be instituted in the pre-season and maintained throughout the season to improve batting parameters.

The training was designed to increase various ocular motor parameters. The muscles in the eyes can be trained and conditioned to perform efficiently and faster when focusing and tracking objects such as baseballs. During the preseason training sessions it was common for athletes to experience delayed onset muscle soreness in their eyes. This sensation was transient and is consistent with muscle conditioning that diminished with training as the season progressed (Clark 2012). Coaches can use vision performance training to enhance their team's offensive game including batting and this may improve play on defense as well. Vision training could be used in pre-season and in season conditioning program as well as for warm ups. Coaches and athletic trainers will be able to make adjustments to the program used to be more intense should players need it or shorter in duration as the season progresses.

Reference:

Clark JF, Ellis JK, Bench J, Khoury J, Graman P. High-performance vision training improves batting statistics for University of Cincinnati baseball players. PLoS One. 2012;7(1):e29109.