

## **Eyes on Target** by **Brandon Begotka, OD**

In my previous article, I talked about the importance of the two eyes working well together. Before getting into how to change the way that they work together, let's go over how they work. We have two eyes, each controlled by six muscles that move them into different positions. When looking at an object, like a clay target, the eye muscles automatically move the eyes so that they are both pointing at the same spot in space. Each eye has a slightly different image of the target, and the brain combines these images into one complete image.

In order to give you a better understanding of this, let's do a short demonstration: Begin by covering your right eye with your right hand so that you are looking only with your left eye. Now, choose an object across the room to look at and point at that object with your left index finger. Keeping your eyes and finger pointed straight ahead; simply move your right hand to cover your left eye. Is your finger still pointed at the same spot? You should notice that it's pointing at a different spot. Both eyes are pointed at the same spot in space, but each eye has a slightly different perspective of what you're looking at.

The brain combines these slightly different images into one image, which gives rise to binocular depth perception or stereopsis. Whenever both eyes are pointed at the same spot, the conditions for accurate binocular depth perception exist. Whenever both eyes are not pointing in the same spot, binocular depth perception is reduced or absent. Closing one eye or using a dot to reduce the effects of cross dominance can reduce or eliminate accurate binocular depth perception because it interferes with the eyes' ability to point at the same spot in space. Both eyes need to be

working well together so that the brain has the information it needs to judge where the target is in visual space.

So just how important is binocular depth perception? Think about when you call for a target and it comes racing out of the house. Does the target appear large or small? Many shooters see the target as quite small, but those with good depth perception may see it as much larger. Which target would be easier to hit, one that appears as small as a pea or one that appears as large as a dinner plate? Obviously, the target that appears larger would be much easier to pick up and hit accurately and precisely.

The question you should now be asking is, “How do I improve my depth perception?” The first step is to have a lens prescription that allows your vision to function optimally. This lens prescription is not necessarily the one that provides you with the sharpest vision, since good vision means more than just 20/20. Instead, you should be using the prescription that allows your two eyes to work well together in order to maximize depth perception. The next step is to get your eyes working well together, and the fastest way to do that is with a program of optometric vision therapy. As a developmental optometrist, I view vision as a learned and developed skill that can be changed at any age. By training the eyes to work better together with optometric vision therapy, we can actually improve a person’s binocular depth perception!

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