# <u>A Primer on Target Focus & Occluded Optic Shooting for Firearms Instructors</u> By Adrian Alan, Critical Impact Group <u>https://criticalimpactgroup.com/</u>

## Target Focus

Vision is a critically important aspect of shooting to understand especially for firearms instructors who will be working with shooters new to pistol mounted optics (PMO). Many shooting problems are caused or amplified by visual errors.

Nearly every movement we make in day-to-day life begins with our eyes. When we point at something, our eyes lock on to the object first and our finger comes up to our line of sight while our focus remains on the object. We don't drop our gaze and shift focus to the tip of our finger as we are bringing it up. However that is what we have been training people to shoot iron-sighted guns for decades.

Target-focus (or threat-focus) is obviously advantageous for decision-making, identifying objects, and detecting changes in subject behavior. Humans with two working eyes have a horizontal field of view close to 180 degrees (about 150 degrees due to cheek bones and eyebrows). However, only in a center cone approximately *one degree* can we see 20/20. Just five degrees off center, even those with the best eyesight can only see 20/70. By focusing on your front sight, your ability to see your target is dramatically reduced. Furthermore, as the body experiences stress from being involved in a lethal force encounter, the pupils dilate and depth of field is reduced, making it extremely difficult to focus on objects other than the threat anyways.

But target-focus isn't just an "advantage" of an optic, it is *demanded* – a critical component needed for shooting accurately, consistently and quickly. Like firing a shotgun with a rib and bead at a clay target or flying bird, shooting a handgun with an optic is more of an exercise in POINTING and CONFIRMING the gun's alignment than it is in aiming. It should be intuitive and natural.

As stated before, our vision leads most of our movement, so where your eyes go, the dot will follow. Picking a small, precise spot on your target and fixating on that spot as you present the pistol is first step, and probably most important to consistently seeing your dot at the end of your presentation.

So why do so many shooters struggle to "find" the dot when

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transitioning to a pistol mounted optic from iron sights? To begin with, most shooters have thousands of repetitions of breaking their eyes from their target to begin looking for their front sight as the gun is presented to the target. As they present the PMO for the first few times, they drop their eyes early to pick up the front sight. With their gaze now fixed on their pistol instead of the target, the gun simply doesn't make it all the way to the target – it "stalls out" below the shooter's line of sight.

You can test this yourself on the range. When you don't see your dot at the end of your presentation, what adjustment do you usually have to do? I'll wager most likely you find yourself doing one of these three things: 1) rotating your wrists forward (which changes the angle the optic is oriented, makes the dot visible from a higher vantage point), 2) dropping your head lower 3) or raising the entire pistol higher. Much less common is a lateral alignment error.

So with a few "reps" under their belt where they have yet to see their dot clearly on the presentation, shooters become focused on "finding" the dot, making the tendency for them to break their eyes from the target even worse. As the shooter presents the gun, they shift their focus to the optic to "find" the dot and the waggle their wrists in a circle until it appears. Because their focus is not on the target, the gun is not anchored and can begin to drift. Combined with the fact the shooters now feels they are behind the curve because it has taken them so long to "find" their dot, they often rush the shot as well – producing not only a slow round, but an inaccurate one at that.

The harder they try to find their dot, the more frustrated they become. Thus, *the key to consistently seeing your red dot during your presentation is to stop trying to see it*. You must let go of the need to achieve the outcome, and simply focus on the process, which in this case is fixating on the specific spot of your target and letting the dot arrive there. The moment of Zen you seek is the realization that **you do not find the dot, the dot finds you.** 

That said, there are other things that will trip a shooter up when it comes to presenting the gun in a manner to consistently see their dot on the target. The margin of error is simply smaller with the optic – because a minor, 2-3 degree misalignment of the gun can cause the dot to "vanish" from sight. Inconsistent head movement, inconsistent grip and violently "punching" the gun out so it shakes at the end of your draw can cause issues, where with iron sights, they can be more easily aligned in your peripheral vision. We'll circle back to this in a bit.

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## **Recoil Control**

The problem of focusing on your dot doesn't end with the presentation however. Recoil management is heavily determined by your vision. When I say recoil management, I don't so much mean how high the gun moves during recoil, but more where it returns when the cycle is complete. We call this "return to zero" or "return to origin" and it is arguably more critical to shooting fast and accurate than the amount of muzzle flip.

As we said before, your vision "anchors" the dot the target. So when you are fixated on a small spot of the target, the dot naturally wants to return there. Most shooters, if they grip the pistol adequately, will find if they start with the dot on target and maintain their target focus, when they fire one round the dot simply re-appears ready to go for the next shot. Even shooting

multiple strings at a higher pace, the dot tends to return naturally to it's point of origin. Shooters tend to "lose" the dot during a string of fire as their grip starts to breakdown, OR they lose target focus and turn their attention back to the dot.

Unlike the presentation, where focusing on the optic tends to stall the pistol below the target, focusing on the dot during recoil tends to leave the gun high on the target. As you're "tracking" the dot up during recoil, it simply wants to go where you are looking. Since you are looking at it, it doesn't really want to go anywhere. So it settles high on the target and stays there as you stare at it.

The saying "aim small, miss small" applies here. You want to focus on a *specific part of the target, not the entire target.*<sup>1</sup> Generally speaking, you will benefit from a more precise *visual focus.* Please note my emphasis and choice of words: *precise focus is* <u>not</u> the same as precise aiming. Despite a precise focusing on a spot on your target, it can still be appropriate to shoot when your dot is simply a red streak moving across it (a lower level of "sight confirmation"). Precise focus does not mean your dot needs to be still and perfectly round for every shot. This is an important concept for another discussion.



<sup>&</sup>lt;sup>1</sup> Eyesight will make a big difference on your ability to pick out a specific spot on a target. At longer distances, especially when the light is reduced, I can't see a single target paster at 25 yards. But I can still see a specific are of my target, and I can tell when my dot is floating in area where I know the A zone to be. It is important to be as specifically focused as your vision will allow, and not simply shoot at the entire target.

#### **OPTIC OCCLUSION**

While focusing on a specific part of your target sounds simple enough, in practice it can be difficult at times even for highly skilled shooters. Movement naturally attracts our vision so the bright red dot bouncing around tends to catch our eye. The easiest way to *reinforce* (NOT "force") target focus during training is to "occlude" (block) the FRONT of your optic with a piece of tape. The rear of the optic should remain uncovered – you should be able to see your dot in the window, but not see through the glass. This helps shooters be more aware when they shift their focus to the dot.



To explain how this works, we need to examine why our eyes do certain things when we are shooting a pistol.

The diagram left is a top-down view of a shooter who positions their firearm in front of their right eye (typical for a right-eye dominant shooter). The shooter's line of sight from their right eye looks THROUGH the clear glass of the optic, and as it does so, it sees the red dot projected on the glass. It also sees the target down range. The shooter's left eye looks AROUND the optic, and sees the target downrange.

Our brain processes this information, and we get the image on the right. The target is in focus, the optic and gun is fuzzy and there may have a slight double image which we typically can ignore. The dot itself will generally look in focus due to it's design, however the shape of the dot and how it appears to people will vary based on characteristics of their eyesight, specifically astigmatisms.



## **Occluded Eye Aiming**

When we occlude the optic as shown below, <u>while focusing on the target</u>, the left eye looks around the optic, and sees the target clearly. The right eye cannot see through the optic window because it is blocked by the tape. So the right eye sees the dot, it sees the tape, but it does NOT see the target. The brain combines the two images into one, and the shooter sees the dot on target.





When <u>we focus on the dot</u>, not only does our focal depth change, the angle of our vision changes as well (diagram right).

Our left eye is no longer looking around the optic, it is turned in at a much steeper angle to look directly AT the optic. The right eye is also looking at the optic. As both eyes are looking at the optic which has tape on the front, neither eye can really see the target.

If the target is close or large enough, the eyes may see the target outline, but they cannot see a specific spot on the target to aim. <u>The result is the sight picture below on</u> <u>the left</u>.







Let's compare these sight pictures:

The image on the left (dot focus), the shooter can still see the dot, and they may THINK they can see it on the target, simply because the target is close enough, they see the edge of it around their optic. But notice the red dot does not appear on the blue paster which is on the target's chest. They cannot see the blue paster. They cannot see to a high level of precision where the dot is on the target, which obviously can negatively accuracy, speed and consistency.

Furthermore, they will likely see a "ghost image" of the target off to the side (these images represent a right-eye dominant shooter). This can cause some shooters to inadvertently aim at the "ghost target" on the left, thinking it is the actual target, causing a significant group shift or missing the target completely at longer distances. At short distances (7-10 yards) the shift may only be a few inches, and may not even be noticed if a high degree of accuracy or targets with clear scoring areas are being used. At longer distances, the shift will be more apparent, and I've seen shooters miss full size IPSC targets completely at 15 yards due to this. If you've been training long enough, you likely have run into shooters who have odd group shifts when they try to shoot with both eyes open – iron sights or optics.

The image on the right (above) represents what a shooter typically sees with an occluded optic, while focusing on the target. There is one clear target, and they can see the dot on the specific part of the target (the blue paster), despite the tape in place. The tape may almost appear semi-transparent, and they may see a slight "ghost image" of the gun / optic off to the side.

*The point of occluding the optic during training, is it helps you recognize when you are not target-focused*. If you focus on the dot, you won't see it precisely on the target. This is an excellent training aid for dry-fire and live fire. World-class competitive shooters in USPSA, 3-gun and other action shooting sports use this during training and sometimes during matches.

That said, I cannot at this time recommend carrying an occluded pistol optic on duty, the same as I would not recommend carrying a rifle optic with the front lens cap down. It does obstruct some of your vision of your environment. My concern is this could reduce awareness or information you may be able to see about a subject's behavior.

### When Occluded Aiming Does Not Work

Occluded optic shooting does not work for everyone. In my experience, about 1 out of 20 (5%) students will see a group shift, or tell me they simply cannot see their dot on their target, even when focusing on the target.

This could be caused by a number of conditions such as *strabismus*<sup>i</sup>, a condition where they eyes do not align properly. The shooter may still be able to see their target, however, in my experience they often see a horizontal shift in their group. This shift could be minor or substantial, with some shooters seeing groups shift to the edge of a USPSA target at only 10-15 yards.



Shooters should be aware if this happens to them, not simply because of how it may affect their use of an occluded optic during training, but in case their optic window is occluded by debris or severely broken during an actual incident. They may have to rely on other visual indicators to align the gun (the optic housing, slide of the gun, etc), clear their window, close distance or disengage.

*Amblyopia*<sup>ii</sup> (often called "lazy eye") is a visual acuity problem, where the brain has difficulty working with the affected eye. It can exist by alone, or can be caused by *strabismus*, a condition known as *strabismic amblyopia*. Strabismic amblyopia causes the brain to rely more heavily on the non-affected eye or disregard the information from the affected eye altogether. Naturally, the stronger eye is most likely the eye a shooter naturally uses to "aim" and is positioned behind the optic, aligned with the target. The brain disregards the information from the eye looking past the optic, at the target, and all the shooter sees is their dot on the occluded optic, and not the target. Essentially, they see what people with normal vision would see if they closed their non-dominant eye.

This is again important for shooters to learn on the range first. A shooter with this condition should recognize aiming with an occluded optic will force them to use other visual indicators (optic house, slide, etc) in relation to the outline of the target, instead of focusing on a specific spot on the target.

Finally, eye dominance issues (specifically "sighting dominance") could also play a role in shooter struggles with occluded aiming. In my experience, shooters who have sighting dominance which is close often experience group shifts as well. When the information gathered by the typically "dominant" eye is reduced by the occlusion, the brain looks to the non-occluded eye for more information. Shooters who have told me their eye dominance frequently shifts have reported they may see the dot on the target, but then it will disappear suddenly without changing their focal plane or moving the gun, and then jump in and out as they attempt to compensate by moving the gun.

Motor dominance (where one eye is less likely to lose fixation at the near point of convergence) and sensory dominance (one eye having stronger vision than the other) are other elements of eye dominance that could also be a factor in the ability to use the occluded eye aiming method.

Techniques should never be thought of in absolutes. Every shooter is different, and thus, techniques are individually refined. It is important for instructors to understand principles and foundational concepts – the "why" behind what is being taught, in order to help coach students and find solutions that work for them.

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## **Additional Reading**

17 Visual Skills, Dr. Kalie Baker https://www.visualprocessinginstitute.com/post/17-visual-skills

Perception, Cognition and Decision Training: The Quiet Eye in Action by Joan Vickers

<sup>ii</sup> Amblyopia, John Hopkins Medicine. Available: <u>https://www.hopkinsmedicine.org/health/conditions-and-</u><u>diseases/lazy-eye-amblyopia</u>

<sup>&</sup>lt;sup>i</sup> Strabismus, John Hopkins Medicine. Available: <u>https://www.hopkinsmedicine.org/health/conditions-and-diseases/strabismus</u>