FAQ of the Month: Does recoil management affect accuracy?

I cannot count the number of times someone at a competition has blamed their recoil management for an inaccurate shot. But is it true? My experience is with centerfire rifles so I will restrict the discussion to this type. It would seem to me that the majority of shooters believe that the management of recoil affects the point of impact (this has included me at times). However, there is good reason to think that recoil management is actually not very important when it comes to accuracy.

Most notable in the discussion of this subject is the well-known Hatcher's Notebook that devotes an entire chapter to the subject. To explain the effects of recoil we need to divide the recoil into two portions:

1) the part when the projectile is still in the barrel and
2) the part after the projectile left the barrel.

Obviously only Part 1 matters to accuracy. Part 2 affects readiness for a second shot and preventing being wacked with the scope. Consider this example, an 18 lb centerfire rifle fires a 185 grain bullet at 2700 fps from the muzzle. In the time the bullet runs the length of the barrel (1.3 thousands of a second) the gun has recoiled about 46 thousands of an inch and the barrel has rotated upward by 0.7 minutes of angle. For an 8 lb sporting rifle you can practically double these values. The force that would be required to prevent the gun from recoiling 46 thou as the bullet moves down the barrel is 4500 lbs at its peak. Certainly no stock could withstand that amount of force. Assuming the butt is resting against your shoulder it also seems unlikely that you have much effect on the motion of the gun during this phase. Even a thick sweater would compress 45 thou!

Given the above I think it stands to reason that the effect of the shooter on the gun before the primer is struck has more effect on the point of impact that anything done after the primer is struck. It is an interesting fact is that many F-Class shooters use a variation on the method known as "free recoil" similar to that used by benchrest shooters. In free recoil the gun is fully supported by the bipod and rear bag and the trigger is pinched against the trigger guard. The gun free recoils through the Part 1 and then is "caught" in Part 2 of the recoil by the shooter. This method gives a consistent recoil when the bullet is moving down the barrel but it also (and maybe more important) minimizes the effect of the shooter before the primer is struck. Considering the forces required to actually limit recoil maybe we are all shooting free recoil whether we are holding onto the gun or not.

Well, if you have your doubts try a few simple experiments and see if you can convince yourself one way or the other. But beware it is human nature to find a reason for every bad shot.

Gordon Holloway