Dear Colleague

**Contrast in shooters’ interests and characteristic groups of club members**

**The Problem:**the writer appeared to have struck a raw nerve when a shooter complained that he had no interest in mastering techniques, nor did he have a long-term ambition to win a Queen’s Prize! In particular, he did not wish to know anything about shooting techniques and strategies. He explained that he only came to the rifle range to chat with friends and get away from responsibilities elsewhere.

Rifle clubs have over many decades been renowned for the help given to their members to overcome shooting difficulties, such as the tremor effect. One or two members of a club have usually undertaken to record characteristic groups that appear over and over again. One of the most common groups results from shooters affected by a tremor from their nervous system. These groups have been recorded and as a result, confirmed as arising from a tremor. It then becomes possible to estimate the proportion of shots affected in this way, distinguished from those that are unaffected. This makes it possible to monitor a shooter’s progress with the trigger-release technique, designed before WWI to overcome the effect of the bodily tremor. The shooter is then able to trick the tremor into not occurring at the same time as a shot.

A problem among club members is the contrast in interests of individuals, which must be recognised. Since the 1950s the writer travelled with shooters who supported other clubs in a region, sharing in the healthy exchange of shooting experiences. On the other hand, there were and still exist, members of each club who rarely travel, preferring to shoot each weekend on the home range. Their only interest is to relax with friends and compete with them for the club championship.

Yet, individual shooters with an enquiring mind, advance and develop various interests. This healthy divergence of interests has led in the 2000s to techniques specific to Target Rifle and F Class shooting. As a result, interesting sub-groups have been recognised within shot patterns of each discipline. These patterns confront shooters until they eventually learn the techniques to produce a 1 MOA V-bull group (TR) and a 0.5 MOA X-ring group (F Class).

This article describes the different types of patterns documented by club that record groups. The recorded groups for a shooter were at first complex, until finally resolved into a single circular group in the middle of a pattern containing a V-bull or X-ring. The work on this was documented and understood over the past century. In another context, prone smallbore shooters have since the 1950s produced a 0.5 MOA group. The group patterns of smallbore shooters were however quite unlike those produced in fullbore.

**Discussion:**in the 1940s and 1950s groups were plotted by a coach independently of a shooter. In the 2000s the introduction of the Hexsystem enabled a coach to look up the Hex database and download the group for each shooter. A club using the Ozscore system likewise has a database which also can be downloaded. On the other hand, the Kongsberg and a Canadian system do not have databases. Groups from these systems are photographed on the screen. The Canadian system is similar, with a group able to be downloaded direct from the scoring screen.

Few shooters appear to be aware of the effects of a tremor upon a group. When setting up a rifle with dummy rounds prior to a shoot, a scorer located immediately behind the shooter has no difficulty observing the effect of a tremor. At the moment of discharge, the shooter’s hat, head, shoulder and hand on the pistol grip can be seen by the scorer to shake by as much as a small number of mm. Similarly, at the moment of shot release, the TR or F Class shooter will observe a very small movement of the foresight or scope element relative to the aiming mark. The shooter expects that if the muzzle is moving at the moment a projectile departs, then the shot can be expected to goanywhere. A careful shooter will then reload with a further dummy round and repeat the shot-release, until no movement is seen to occur between the foresight or scope element and aiming mark. Thedegree of carerequired for a non-moving shot, i.e. without a movement due to a tremor, is then the key to releasing unaffected shots. When a shot is not affected by a tremor, it will group within the V-bull (TR) or X-ring (F Class).

Since the 1950s, the writer and thousands of other shooters in smallbore and fullbore, used an approach known asthe trigger-release technique. It relies upon the shooter supporting the rifle dead still until the shot is released. That is, the foresight does not move relative to the aiming mark or show unexpected movements that need correction. For this, the TR shooter needs to use a really effective rifle support technique, which most shooters eventually learn to master. The secret is for the forward elbow and arm to be placed directly underneath the rifle. A sideways position requires arm muscles to be under a degree of tension, which in turn moves the foresight. Yet, ninety percent of fullbore TR shooters do not presently use the vertical position!

**Practical**:  in order for the trigger-release technique to function correctly, the foresight or scope element must be dead still. The shooter imagines a first stage of trigger pull and then pulls this quickly until the trigger begins tobite. With the rifle dead still, the shooter then significantly slows the rate of pull and mentally imagines where it has reached while pulling the trigger. This focussing of concentration continues until discharge occurs as a surprise. The technique also provides a means of ensuring that follow-through has been complete.

In both techniques, failings occur and shots are released under the effect of tremors. Tremors do not really send shots anywhere, but into definite patterns or groups.

(The Group Record for a club shooter)

The most common tremor pattern: whereas shots unaffected by a tremor appear in the centre of the aiming mark, it is usual for affected shots to also appear around the boundary of the bullseye (TR) or around the 6-ring (F Class). The pattern in both shooting disciplines is then a central group surrounded by shots around the perimeter as above. The inner and outer groups are mathematically different, yet centred upon the V-bull or X-ring.

A common tremor pattern: some shooters appear to produce a small central group of shots unaffected by tremors, accompanied by a larger ring of affected shots, not centred (for an unknown reason) upon the V-bull or X-ring. The unaffected shots appear to be densely packed together. The affected circle of shots is often centred on the bullseye or inner ring at 3 or 4 o’clock, while some shooters find it appears on the left, often a ring of inners at 10 or 11 o’clock. The unaffected shots are within 1.0 MOA (TR) or 0.5 MOA (F Class), whereas the affected circle is larger, often 1.5 to 2 MOA. If an F Class shooter decides to correct this by aiming off, then he will be in deep trouble if the shot departs without a tremor. The error is then greater because aiming off assumes that the group size is 7.62 mm, the diameter of the projectile.

A much less common tremor pattern: shooters appear to produce a small central group unaffected by tremors, accompanied by a straight line of shots anywhere within the 6-ring or bullseye (again for an unknown reason). The straight line typically occurs across the whole 6-ring (F Class) or even the complete bullseye (TR). It can be in any direction and often appears to be tangential to the bullseye (TR) or 6-ring (F Class).

The solution to each of these patterns of tremor shots is to not alter the rear-sight or scope sight. The shooter must simply not allow the tremor effect to occur again. Since the central group is within the V-bull or X-ring, then the next unaffected shot will again be a V or an X. As the shooter progressively uses the trigger-release technique properly, avoiding tremor shots, then scores of 48.8 (TR) and 59.9 (F Class) begin to appear.

**Conclusion:**a member who records groups within a club can play a very important part in encouraging shooters to master the trigger-release technique. With the availability of the Hex and Ozscore database systems, clubs may assist their members to group closer than they have ever done before. Many shooters find from their groups that they really do not have the rifle supported dead still. The elusive tremor effect continues to the present day. Shooters as far apart as Hornsby and Darwin have found that when their trigger-release technique is working well, their groups became as small as the V-bull and even the X-ring. That is, there is an increasing number of TR shooters whose groups are within the X-ring.

Best regards

Geoff