Dear Colleagues

**Coaching a shooter whose shots are at 9 o’clock or surround the bullseye ring**

**The Problem:**   a coach of a team often needs to assist a shooter to overcome recognised grouping difficulties. Each shooter has his/her own peculiarities and has even been known to tell the coach: I only ever let a perfect shot go. When asked about this, a cheeky reply has been: when a shot hits high or low, it is mine and if it goes sideways, then it’s yours’.

Numerous shooters known to a coach release more than one shot at 9 o’clock, as far out as the magpie line. However, the majority of a shooter’s shots form a hollow group and appear to follow the boundary of the bullseye.

The 9 o’clock shots are often a mystery to both the shooter and coach, i.e. until he/she arrives at the firing point with the rifle. An effective coach will immediately recognise the design of a cheek-piece which is the origin of the 9 o’clock shots.

This article describes what a coach is able to do to help TR and F Class shooters put shots into the V-bull or 6-ring, instead of:

* 30 to 40 percent of shots going into a 1 MOA group at 9 o’clock
* a few shots appearing in the V-bull or 6-ring, with the rest seeming following around the boundary of the bullseye
* a few shots in the V-bull or 6-ring, with the rest in a 1 MOA group centred on the edge of the bullseye at 3 to 4 o’clock.

The writer’s coach, Mr Edward John Teague (1870-1962) of the Launceston Rifle Club, Tasmania, advised that from about 1886 to 1914 the techniques described here were critically important to all rifle shooters. In the same period, Mr Thomas Hann, at Lysaghts Rifle Club, Newcastle, NSW, taught precisely the same techniques. Two of the students of these coaches won the World Championship in Rifle Shooting. Yet in the 21st century, shooters continue to show that they have not been able to find out about these techniques through their own experimental efforts. Despite this, leading Australian and UK smallbore shooters have since 1950 all used these same techniques.

**Discussion:**   shots often appear in 1 MOA sub-groups at 9 and 3 o’clock, which resemble a flattened group across the V-bull (TR) or 6-ring (F Class). More than 70 percent of shooters routinely start a shoot with a 1 MOA group in the V-bull or in the 6-ring. Shots assumed by the shooter to result from changes in wind strength, soon appear on each side, as far out as the edge of the bullseye ring. A shooter who learns at the hands of a coach, is taught that such shots often result from changes in the tension of the hand on the pistol grip. The hand tension effect is extremely sensitive. It results from not having learned to ensure that each of the two large palm muscles, together with the muscle behind the index finger, should be lightly and evenly balanced on the pistol grip. If the tension of the hand is increased slightly, then a RH shooter will experience a shot near or just over the bullseye line at 3 o’clock. If slightly less tension is used, then shots will appear at 9 o’clock.

A proportion of shots that appear at 9 o’clock, is closely related to the pattern which appears on each side of the bullseye. They appear to result from the need for the rifle to recoil freely, i.e. without being impeded by any part of the body except the shoulder. An F Class shooter may instead rely upon the absorption of recoil energy by friction of the stock against the rifle-rest.

Recoil may be also be impeded by tension between the shooter’s face and a cheekpiece, shaped to closely fit cheek muscles.

A circle of shots may otherwise appear to follow the boundary of the bullseye, as bullseyes or inners, i.e. just outside the line. A closely-related phenomenon may also occur, consisting of a central 1.0 MOA sub-group alongside another 1.0 to 1.5 MOA sub-group, located close to the boundary of the bullseye at 3 to 4 o’clock. The difference between these groups appears to result from the way the shooter supports the rifle. The origin of the differences between these patterns is unclear. However, each of these effects can be shown to result from adrenaline tremors, which cause movement of the muzzle at the moment of shot release. Other related effects are known, such as a halo of shots above or below the V-bull and a straight line of shots up to about 3 MOA long, in any position across the bullseye.

A shooter may easily each of these phenomena. This occurs when releasing dry shots and watching for the timing of the non-appearance of movement of the foresight or scope element upon shot release. The procedure begins with an initial measurement of the time (in seconds) required for a tremor to no longer be detected, measured from the moment the trigger just begins to bite on reaching the imagined second-stage. For most shooters this is about 5 or 6 seconds. That is, a shot released at less than this time can be expected to coincide with a tremor and as a result, not hit the V-bull or 6-ring. It will hit anywhere around the edge of the bullseye because of the movement of the muzzle in response to the adrenaline tremor. A shot released longer than this time from a dead-still rifle, will instead group within the 1.0 MOA V-bull or 6-ring.

With practice, a shooter will find that the critical time progressively reduces, to as little as 3 seconds. Forcing this to happen, will only result in a shot not hitting the centre. It will instead hit somewhere around the boundary of the bullseye.

**Practical:**the common approach by a coach is to ask a shooter to apply slightly more tension from the hand on the pistol grip. The shooter can be surprised at how little tension can cause a 1.0 to 1.5 MOA shift in a group. Experiencing such a sensitive shift will usually convince a shooter. A shooter soon learns to ensure that the hand is placed with exactly the same tension for every shot in a shoot.

A coach who finds that the shooter has a beautifully carved cheek-piece, may simply ask the shooter to try a shot with the face barely touching it, then another shot with the face resting comfortably against the cheek-piece. A RH shooter will find that even the slightest difference in the tension of cheek muscles against the butt, is enough to shift a shot pattern out to a wide bullseye or an inner at 9 o’clock. This effect is very sensitive, about the same as the tension of the hand on the pistol grip.

The solution to the face-tension handicap is to place the thumb knuckle on the pistol grip, so that at 300m it just touches, i.e. the upper cheek muscle. At 600m, the thumb knuckle may just touch the upper lip, i.e. near the canine tooth. Then at 800m, the thumb knuckle may just touch the jaw-bone. If the shooter goes back to 1200x, then the thumb knuckle touches no part of the face, giving the shooter a strange sensation of the head unsupported in mid-air. At each distance, the shooter’s head is not supported with tension against the butt. It is simply positioned by the thumb knuckle and is free of sideways tension.

As a result of overcoming the adrenaline-tremor effect, a TR shooter can expect to shoot a V-bull instead of a wide bullseye or inner. Likewise, F Class shooters can expect to group within the 6-ring instead of the bullseye. This technique must be used by every F Class shooter who seeks to score all shots within the 6-ring or X-ring.

**Conclusion:**a TR or F Class shooter who experiences an unwanted group at 9 o’clock and/or around the bullseye ring, needs to be taught these basic techniques by a coach. These are only two of many other techniques which a shooter must be taught. They cannot be learned solely from the conversations of other shooters, who have themselves often not been formally taught by a coach.

Best regards

Geoff