Dear Colleagues

**Overcoming the build-up of adrenaline and a body tremor upon shot release**

**The Problem:** most shooters have experienced:

* a tremor of the foresight (TR) (or scope element (F Class)) and rifle muzzle upon release of a dry shot
* a build-up of tension, so that upon the occurrence of a misfire, a tremor is visible in the hand that rests upon the pistol grip, as well as the head and shoulders
* a long-term increase in the concentration of adrenaline in the bloodstream, which reduces the shooter’s ability to control tremors and stability of the sighting system and muzzle.

It is of real concern when a shooter experiences a longer-term increase in the concentration of adrenaline, which can be observable when a misfire occurs. However, it is even more worrying when it appears to the shooter that it is no longer possible to manage the build-up of adrenaline. That is, the shooter’s ability to manage nervous tension appears to be permanently affected.

This article describes the build-up of adrenaline in the body and the means of overcoming or managing it.

**Discussion:**the nervous system has self-protection mechanisms largely unknown to the shooter. There are various types of mechanisms, each accompanied by a movement of muscle tissues in response to a rush of adrenaline in the bloodstream.

Every shooter is well aware of the very common tendency to jerk the trigger and rifle in anticipation of the noise and recoil about to occur. Many shooters learn to prevent this by intentionally confusing the nervous system. Firing 5 or 6 dry and live rounds alternately, appears to cause the nervous system to become confused and cease jerking the trigger. Otherwise, many shooters are eventually unaffected by the noise and recoil and experience no jerking of muscle systems due to the nervous system. The most common indication of the nervous system causing muscles to jerk, is a tendency for shots of a RH shooter to group in a diagonal pattern from the centre toward 1 o’clock. The writer has observed this in some new shooters while for others, no pattern is seen.

As well, some of the barrel movements that occur following recoil have been thought to originate from the nervous system. Many shooters try to correlate these widely different movements with particular techniques used by shooters. Whereas many coaches consider they understand this well, the writer considers he is a complete novice with little or no idea!

The most common rifle movement with an effect upon a group can be observed when a shooter releases a dry shot. The foresight (or scope element) is seen to move relative to the target. Testing and recording by the writer, with observations from more than 200 shooters, has led to the conclusion that movement of the muzzle at shot release results in a group the size of the bullseye, i.e. about 2 MOA. Whereas, if there is no movement of the foresight and muzzle at shot release, then the shooter may achieve a group of 1 MOA. In short, the group at most ranges can be as wide as the bullseye, whereas no movement of the muzzle results in a group the size of the V-bull (TR) or 6-ring (F Class).

This latter movement of the rifle at shot-release appears to result from the nervous system. Evidence for such a conclusion arises from the fact that the shooter has the ability to interfere with the nervous system, which for many causes the movement to cease entirely. Usually all the shooter has to do is wait 4 or 5 seconds for the concentration of adrenaline in the bloodstream to dissipate naturally, then release the shot. Many shooters use this alone as a means of controlling the nervous system to group within the V-bull. In many instances such shooters score 50.10 and 75.15 (TR) or 60.10 and 90.15 (F Class).

Observations have shown that nearly every shooter experiences this last nervous reaction.

**Practical:** when a shooter finds that he/she is experiencing a build-up in the concentration of adrenaline, a silent question then occurs: for how long and how much has this been affecting my groups and scores?

Many shooters even pretend it never affected their groups! Some do nothing, apparently convincing themselves that their groups and scores have not been affected. On the other hand, a leading shooter knows he/she is in trouble. What is uppermost in the mind is, nobody has ever mentioned this to me!

The writer and many others have since the early 1950s used a quick test for each type of nervous reaction. They would then continue shooting completely unaffected by either a build-up of nervous energy or the common adrenaline response which lasts a matter of seconds. All the shooter needs to do is fire two or three dry shots while waiting for the previous shooter to complete his/her shoot. The shooter’s dry shots should enable him/her to ensure that there is no sign of movement of the foresight or scope element at shot-release. Of course, the shooter is quite unaware of such movement when a live round is released.

However, many shooters also appear to experience a combination of nervous reactions. That is, a shooter may experience the increase of adrenaline associated with an imminent shot-release and as well, the build-up of a longer-term nervous reaction. Awareness of this during pre-shoot testing is alone insufficient to overcome the build-up. That is, it may reappear during the next shoot, indicated by wider shots around the perimeter of the bullseye or even further out.

The cure adopted by some shooters who realise what is happening when their group widens is to immediately fire a dry shot in the middle of a serious shoot. Upon re-establishing that no movement of the rifle is still occurring, then the shoot is continued, often with a central bullseye for the next shot to count!  It is possible that many shooters experience this build-up of nervous tension, who should immediately cure it at short notice. It could well be that most shooters experience foresight movement and have yet to learn even a temporary cure.

**Conclusion and Recommendations:**if a shooter experiences both the short-term tremor that moves the rifle muzzle, as well as the build-up of nervous tension over time, then these effects can often be simultaneously remedied. That is, the solution may simply be to release dry shots until no muzzle movement continues and then start releasing live rounds again. Hence, a shooter should make every attempt to monitor and repair each of these nervous reactions.

Note however that shooters are individuals, some of whom respond as above, while others should not interrupt a shoot to undertake such a remedy. The writer has always been able to regard the pre-shoot period as a chance to quieten and compose the mind. Some shooters regard this as absolutely necessary. Whereas many other shooters identified by the writer are able to stop shooting (within the elapsed time allowed for a shoot) to quickly confirm that group-widening exists as a result of the adrenaline response moving the rifle muzzle. These shooters are then often able to close up their group and complete their shoot with a 1 MOA instead of a 2 MOA group.

Best regards

Geoff