Dear Colleagues

**Plasticity of the nervous system can enable a new shooter to become self-motivated**

**The Problem:**most rifle shooters commence the sport with enthusiasm, shooting well as learners. Many come into the sport to share in this enthusiasm. After a few years, when a club has increased in numbers to between 40 and 60, it is found that many cannot see a way of progressing further. Many want to shoot much better, perhaps as well as the leading shooters of the state or nation.

This occurs for the same reason that 90 percent of kids at school miss out on passing their higher school certificate, with enough Australian Tertiary Acceptance Rating (ATAR) points to be accepted by a university. Without this, students cannot study for the degree and professional career that their families think they would have been ideally suited.

This article describes the experience of a small number of shooters, who learned rifle shooting at the hands of very experienced coaches. They became leading shooters, having been taught to support the rifle dead still, confirm for every shot that the rifle is on the natural point of aim and as well, to release the trigger without bodily tremors widening the group. Likewise, some young people who left school at 15 years of age and resumed their education through private study, were able to qualify to enter a university. Some obtained a university degree, which enabled them to commence a professional career in a field where financial difficulties are not the norm.

**Discussion:**  the majority of teachers and sport coaches, whether in education or rifle shooting, appear to be unaware that it is possible to inspire self-motivation.

Teachers tell the parents of 90 percent of students, that their children are plodders and will never have the capability to go on to university. These teachers know of, but ignore the fact that there are super-teachers, for whom kids in their classes cannot help but pass key exams and go on to university. In some Australian States, teaching unions have banned such teaching, because they think it involves too much hard work for a teacher. Unions want smaller class numbers and assistant teachers to be assigned to share the work of each teacher in charge of a class.

Such union involvement has for many years led most teachers to continue their poor standard of teaching, which condemns most kids to a poor education. It does not allow them to obtain decent jobs and live with an income that matches their actual level of intelligence.

Inspiring self-motivation enables students to want to learn, instead of just having facts given to them, enough to pass an exam. In both rifle shooting and education, coaches and teachers do not appear to know how to assist learners to build self-motivation, self-esteem and a sense of self-direction.

There are two levels of teaching required for learners to become self-motivated:

* initial teaching, that enables learners to become skilled rifle shooters or students and know how to approach a new topic to the level of their apparent ability
* utilizing the principle of elasticity which enables nerve cells of the brain to be extended, enhancing a learner’s self-motivation, so that he/she can achieve at a much higher level than their apparent potential.

Most rifle shooters and teachers do not understand that there is a further stage which can be reached, which enables a person to perform at high-level, i.e. above their readily apparent potential. Each is well known to learners who have progressed through both levels and beyond, becoming winners of many Queen’s Prizes and perhaps, leaders in a profession.

The second type of learning is an important field of medicine, which has been known for a long time. It concerns the principle of neural plasticity of brain cells and their associated connections. The development of neural plasticity was described earlier by William James (1890), Karl Lashley (1923), Jerzy Konorski (1930s), Justo Gonzales (1945) and in the 1960s by Paul Bach-y-Rita, Michael Marzeuse, Jon Kaas, Shepherd Ivory Franz, Marion Diamond, David Hubel, Torsten Wiesel and Clinton Woosley.

The principle of neural plasticity provides for the nerve cells of the brain to:

* be eventually replaced (e.g. by stem cells) when badly damaged
* grow and perform further functions, through extensions and new linkages, forming pathways that connect important brain components.

Of course the two stages do not occur one after the other, but overlap depending upon the skill of a teacher. Sadly, teachers in schools appear to have very little understanding of this latter stage of learning. Likewise, the education bureaucracies of the UK, USA, most western countries and each Australian State, almost exclude opportunities for the 90 percent of students to be taught and develop further. They are as a result unable to identify a lifelong career interest at university. Sadly, the ignorance of the teaching profession extends to sport coaches, so that rifle shooters are also unable to develop further.

**Practical:**in rifle shooting, there now exist a small number of leading shooters who have won many Queen’s Prizes. Winning a Queen’s Prize is regarded by most as not likely to come within their grasp. The writer can assure readers that this occurs for a small number of shooters who were developed further, according to the second learning principle. Similarly, of the 90 percent of students who are unable to attain the necessary development, there have always been a small number who have left school, been educated and accepted by a university. The writer did this, fulfilling laboratory requirements at night school. Home-schooling is today a viable means of pursuing this course, largely because of the dedication of a parent working under the guidance of a supervising teacher. Parents who wonder whether to  do this should examine how well their kids are learning in the first two years of high school.

Rifle shooters are now being schooled by some very skilled coaches, who are able to teach them to simultaneously:

* support a rifle dead still
* confirm and adjust the natural point of aim for every shot
* quickly apply the tension of the trigger finger, until the trigger is felt to begin to bite at the start of the second stage
* release the second stage of the trigger, while holding the aiming mark dead still in the centre of the foresight ring or scope element, until release occurs
* keeping the shooter’s mind involved in measuring progress of the trigger-release step, so that release occurs with follow-through.

The skilled shooting coach is not only able to teach these steps, but to constantly assist the shooter to steadily follow them. This is done so that the enhanced nerve cell system encompasses the second phase of learning. The coach soon finds that each shooter develops increased self-esteem (which can be measured) and also internal self-direction. This second stage development might best be described as inspired self-motivation.

There is now a rifle club in an isolated part of Australia, where TR and F Class shooters have been working under such a coach for several years. The F Class shooters are now able to regularly score possibles, i.e. group within the 0.5 MOA X-ring. Several of the TR shooters are capable of routinely grouping within the V-bull at most ranges.

**Conclusion:**  neuro plasticity has been known for the past century and is the key to learning at higher level, in both rifle shooting and education. There are now a number of multiple Queen’s winners, TR shooters who often score 50.10 and F Class shooters, who can group within the X-ring. Rifle shooting can now be taught at middle level and by more-experienced coaches, to inspire self-motivation.

The first level of learning can be undertaken by training shooters to teach new shooters. The second level is able to be created through recruiting existing high-performance shooters, who are often also trained in professional careers. Many of these shooters have not made themselves known, but exist in rifle clubs and could be recruited to teach shooters. The writer is actively involved in this.

Best regards

Geoff Ayling  AM  MSc  CChem  MRACI

Forensic Scientist, Registered Teacher (NSW, UK), International Sports Person

Winner of 16 Queen’s Prizes, including HM The Queen’s Prize, Bisley, 1981

Winner of the World Championship at Bisley, 1980

Winner of a Commonwealth Games Gold Medal, Brisbane, 1982

Coach and Shooting Member of State and Australian RifleTeams, to each Australian State and Territory, the UK, New Zealand, Canada, the West Indies and Kenya

Annual Coach at Bisley for County Tyrone (Northern Ireland) and Kenya

PS The writer is able to confirm that:

* in 1950, commenced miniature rifle shooting, at Patterson Barracks, Launceston
* in 1952, commenced fullbore rifle shooting, coached by Mr Edward J. Teague (1870-1962), Launceston Rifle Club
* in 1954, won first District Rifle Clubs Union open prize meeting, Launceston, Tas
* in 1955 competed unsuccessfully in trials at Williamstown, Vic for the Australian Olympic Games Team, Melbourne Olympic Games, 1956
* in 1955, left the Launceston High School at 15 years of age, undertaking private study and practical work at night for physics and chemistry at the Launceston Technical College (in 1957)
* in 1957, member of first State Team in Commonwealth Matches, Perth, WA
* in 1957, sat and passed Matriculation Examinations at Launceston; employed by an insurance company
* in 1958, second State Team in Commonwealth Games, Adelaide, SA; won First Stage of South Australian Queen’s
* in 1959, commenced studies at University of Tasmania for a Bachelor of Science Degree (1966) and subjects, leading to teaching qualifications required for employment in a Tasmanian high school
* in 1966, awarded the Degree of Bachelor of Science, University of Tasmania; commenced career as a forensic scientist, at Australian Oil Refining, Kurnell, NSW; 1968, Mount Isa Mines, Qld; 1969, Government Chemical Laboratories, Royal Hobart Hospital, Tasmania and 1972, Chemistry Department, University of Tasmania
* in 1974, won first Queen’s Prize and 16th Queen’s Prize in 1992
* in 1977, awarded the Degree of Master of Science, University of Tasmania
* each of these attainments was the result of having been inspired to be self-motivated in rifle shooting (by Mr Edward Teague) and forensic science (by Professor of Chemistry, Harry Bloom, University of Tasmania)

There is no doubt that the writer was taught rifle shooting by a very experienced coach. The question remains, how did he manage upon leaving high school, to acquire the same level of assistance to enable him to privately study educational subjects, needed to be accepted to study at a university. He did not meet his inspirational career teacher (Prof Harry Bloom) until well advanced at university.

It has been suggested that the inspiration to become self-motivated to obtain an education, may have occurred earlier, when self-motivated to learn rifle shooting while at high school. The writer is unable to accept this because it is just speculation. A pity he was not self-motivated while still at school!