Vision & Sensory Integration

Connecting Vision & Body

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Sports Vision and Target sports

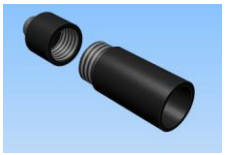
Visual Errors Affect Performance

Accuracy depends on eyes ability to gauge a separation of two objects and recognise symmetry. The rifle shooter requires optimal contrast between the foresight ring and aiming mark – this can be achieved through choice of iris opening, foresight ring size, managing fatigue, eliminating reflections and glare, trialling filters and optimising vision. Proper aiming depends on being consistent in maintaining sight alignment and is dependent on visual acuity (clarity of sight).

Visual Aids

Refractive errors are correctable with shooting frames and lenses, rear sight lenses and contact lenses. Non-reflective lenses protect eyes from annoying reflections.
Lenses and filters need to be easy to clean as dusty lenses can cause errors and strain. Sunglasses and safety glasses should also be used.

Shooting Frames

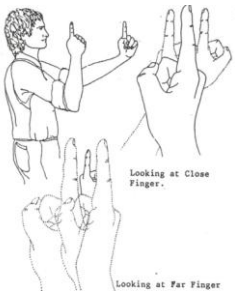

Lens must be correctly centred to avoid distortion – shooting frames and lens holders can be centred before the line of sight regardless of the shooters position. Normal glasses are usually not suitable. Some shooters are choosing to have their prescription in a shooting frame as well as having additional lenses of either +0.25D or -0.25D held in a lens holder before or behind the front sight, these additional lenses are either added or removed depending on the sight picture being influenced by fatigue or environmental conditions.

Choosing Filter Tints:

Tints selectively filter light by absorbing it and reducing transmission – for example, amber filters blue light. Light is focussed in a tighter range, chromatic blur is reduced and clarity and contrast are enhanced. There is no consensus on which tints are better to use, however the most acceptable are yellow and orange filters of light and medium densities. As a rule choose the lightest tint you can wear without having to squint or feel uncomfortable and choose the correct tint before competition by

comparing the colours on the ground before shooting. Bryan will assist you with filter tint selection by bringing tints to your range testing appointment.

Visual Skills:



Optimal visual skills improve performance and reduces visual fatigue. Even if you already wear prescription lenses or contact lenses, the visual skills you need for optimum sports performance probably need improvement. If you do not require a vision prescription, your visual skills may still be enhanced through vision training.
Visual training can be prescribed to improve visual stamina, focusing, eye movement control, eye teaming, eye hand coordination and mental rehearsal.
In shooting, best accuracy occurs when the eye focuses at the foresight and not at the target at the moment of shot release.
Depth of field is the range of distances which the eyes perceives as being in focus. Maximising depth of field allows the eye to concentrate on the sight picture, without constantly trying to shift focus between the foresight and the aiming mark. The depth of field can be improved by adjusting the rear sight aperture. A new lens called a MicroSight is being developed to improve depth of field, contact Bryan on updates on this product.

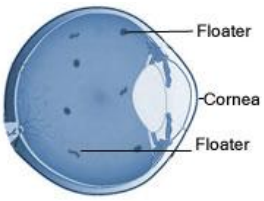
Rear Sight Aperture

Rear sight aperture regulates the amount of light entering the eye by acting like an artificial pupil. Too wide an aperture and the sight picture may be too bright, whilst too small will darken it. It needs to be checked often to compensate for fatigue and changing light. Aim for just above where the picture starts to darken.

Eagle Eyes

An Eagle Eye is either a +0.25D or +0.50D lens positioned in front or behind the foresight and it has the effect of magnifying the aiming mark but can also blur it. From experience the sight picture can be improved by prescribing either the optimal distance prescription or -0.25D less to clear the aiming mark, as long as the front rings stay clear. Deciding what is the better option is trialled during the range test

Seeing Spots Before Your Eyes (Floaters)



Floaters are particles within the eye. They are distracting if on line of sight but are normally ignored by the brain. Floaters appear more often with dry eye and dehydration, also stress and fatigue can bring them into consciousness. An eye examination is required. Some simple treatments includes relieving fatigue, treating dry eye, staying hydrated and flicking the eye before firing to move the floaters away.

Dry Eyes Or Sore Eyes

Dry eye blurs vision; degrade image quality and hence visual performance. Treatments include taking vitamin supplements, using tear supplements, cooling eyes with cold compresses, refreshing lids with saline lid cleans and protecting from wind and glare with sunglasses.

Preventing Eye Fatigue

Protect the eye from excessive light. Blacken any bright spots or reflections in the fields of vision, on the surface of the gun or sights. A foresight tunnel can be fitted with extensions front and back to reduce glare. Rubber eye cups on the sight eliminate bright sunlight from the side or rear. Prevent barrel reflections by covering with cloth tape or mirage band and use a Maccap style of hat to protect the eyes from bright sunlight. During intervals, use sunglasses to rest the eyes.
During aiming, the same receptors are at work and danger of fatigue is significant. An after-image may occur from fatigued receptors. It is important to manage eye fatigue during shooting by avoiding shifting the point of focus too frequently and avoid prolonged aiming (5-8 seconds maximum). Also blink normally, avoid staring, look away during pauses and rest the aiming eye by scoping with the non-aiming eye. When checking inner position, some close eyes, others prefer to avoid pupil fluctuations by looking down with an unfocussed gaze at a dull surface which has even tones of grey (least photo receptor activity), green or blue.

Sports Vision assessments are done in two stages: A full examination followed by range testing

Full Examination

A full examination is where common eye conditions are detected and treated. The old prescriptions and shooting lenses are measured and compared against the new prescription.
Visual skills are assessed and if required, a program of visual training will be designed to improve the skills required for shooting.
A full eye examination should be done at least every two years and is covered by Medicare. No referral is required.
Come prepared by bringing your current shooting lenses

Range Testing

The prescription for a shooting lens can be affected by environmental conditions, the sight radius, eye relief and optical aids such a variable rear sight aperture, Dioptres and Eagle Eyes.

The most accurate approach to take into account these variables is to assess at the range while observing the sight picture. The sight picture is optimised by trailing lens and filters while testing in the real environment. For many the best sight picture is where the front sight is clear with minimal or no blur at the aiming mark.

Whatever your Target Sport discipline may be, poor visual acuity will stop you realizing your full potential.
Contact Bryan Smith today on 0404 540 497 for a complete eye examination and professional advice on your personal vision requirements.

The Sports Vision Clinic is conveniently located at the Training Centre, directly behind the QRA Office at Belmont Range– see map below.

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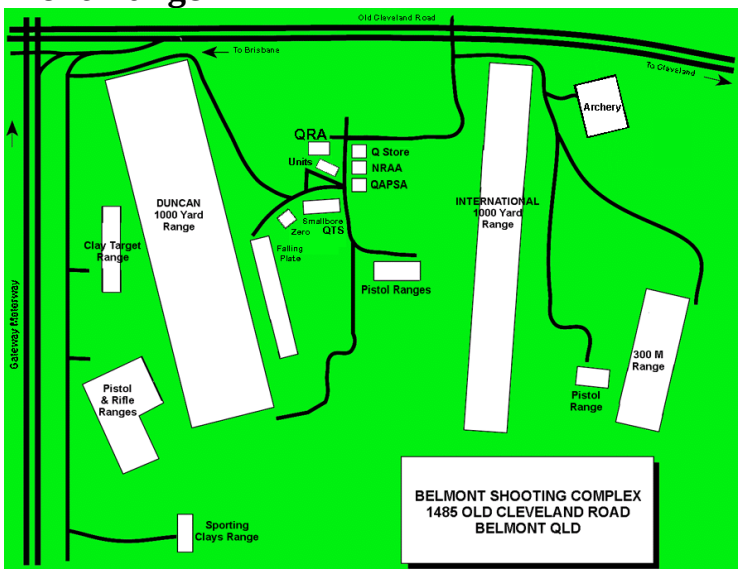
Queensland Rifle Association
QRA Training Centre, Belmont Range,
1485 Old Cleveland Road, Qld 4153
Mobile: 0404 5404 97

Site map of Belmont Range



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