

ISSF National Coach Course

CLAY TARGET

Ready position

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1. INTRODUCTION

This course analyzes the technical process concerning the construction of a correct ready position, divided into the following topics: shooting stance, body position, arms and hands position, head position, gun hold position and eye hold position.

These topics have several similarities for both the Trap and Skeet Olympic disciplines, so they will be treated simultaneously for each individual aspect. As it is known, in performing the technical gesture, the athlete performs his movement by mounting a firearm; the athlete-gun combination can be taken as the reference system to be evaluated in the development of the shooting technique. The principles of biomechanics and physics are a very valuable resource from which to draw in order to increase the shooter's technical skills, giving him the opportunity to achieve the best possible result in performance and to keep a constant level over time.

Years of research, analysis and field tests make it possible to set the teaching method that will be described in this manual, giving a solution to the various questions that a coach has to solve each time in teaching athletes with peculiar characteristics and potential.

The first step is to define the correct ready position through the implementation of scientific principles borrowed from biomechanics and physics, which correlate all the various elements of which the body-gun system is composed.

How to choose the distance between your feet and how to orient them? How can knees and pelvis influence the technical gesture? By studying in depth the morphology of the shooter

and analyzing how he or she needs both stability and rotation, knowing the movement range he or she needs in every circumstance, the coach can decide which positioning of the feet to adopt and how to orient them, how to hold the knees and pelvis. Which role do the shoulders play? How to decide what kind of shotgun mount to use? Where to point the shotgun? And the eyes? To every question can be given an exhaustive answer, such for example as the importance of keeping the muscle chains aligned with each other in order to achieve a harmonious and efficient technical gesture.

This course aims to use a well-defined technical process for the construction of the ready position, so as to be able to build a solid foundation through which to develop a correct shooting technique without being influenced by the different shooting styles, but taking as reference the morphological characteristics of each shooter by connecting them to the body-gun system.

2. READY POSITION: WHAT IT IS

The ready position is the starting point in the teaching of the shooting technique, it affects the performance of each athlete as it is measured to the stability of the shooter to whom it gives the option to start the movement with ease and greater control.

A stable and comfortable ready position of the body allows the shooter to maintain balance more easily and with less energy expenditure both in physical and mental terms, thus, less effort will be needed for the brain to determine when to start the movement.

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It is characterized by a sequence of actions that the shooter performs in preparation, which ends before the target call. This sequence must be repeated in the same way in each stage in the Trap discipline, contrary to the Skeet discipline where the shooter makes small variations in the different stages.

First of all, it is essential to distinguish the differences between the two disciplines:

- in the Trap, the ready position ends with the shotgun positioned on the shoulder



- in the Skeet discipline it ends with the shotgun locked and the heel of the stock touching the strip on the shooting vest. The stock should be visible below the elbow line, at hip height.



You must therefore take into account the mechanics of the movement that must be performed to hit the target: in the Skeet, the shooter, following the call, carries out the mounting action by bringing the gun from the waiting position to the shoulder while at the same time trying to align with the target on its flight trajectory, while in the Trap, he moves the gun so as to move the sighting from point A, fixed at the end of the waiting position, to point B, the point towards which the clay target travels in a straight line, moving further and further away from the shooter.

In order to define a correct ready position it is necessary to divide its structure into different steps, this allows you to better analyse each aspect taking into consideration the morphological characteristics of the shooter and the characteristics of the gun. It is convenient to follow the sequence of construction of the ready position starting from the lowest part of the body and the contact with the ground and then up to the upper part of the body.



3. SHOOTING STANCE

The body stance on the platform is essential as it is the starting point for the movement towards the clay target; a proper body posture allows the shooter to find the best possible condition to achieve a positive result.

In the shooting disciplines there are different techniques to be used, which in turn require different stances; first of all it is necessary to focus on how to perform the technical gesture to hit the target, in order to decide which is the best stance to choose, but at the same time it is important to take into account the morphological characteristics of each shooter, as these can affect, positively or negatively, the stance being chosen. In any case, we can underline a key concept right from the start: a natural posture avoiding any muscular tension makes it

possible to perform the technical gesture in a more smooth and controlled way, giving the shooter greater reflex readiness. This means that if the athlete uses more energy for both holding the chosen stance and to support the weight of the gun, he will need to overcome the muscular resistance he creates when beginning the movement towards the target. This unnecessary energy expenditure has several negative consequences: first of all there is a delay in starting the movement due to the muscular tensions to be overcome; consequently, having to use more strength to start the technical gesture, the shooter will tend to easily lose control of the movement and the shotgun will simply be pushed towards the target.

From the information shown above it is clear how the body stance directly affects the athlete's performance; the use of a natural posture, adapted to the morphological characteristics of the athlete and less energy-intensive makes it possible for the shooter to keep a greater consistency in his/her performance, thus avoiding alternating high level performance with below average performance.

BALANCE AND STABILITY

The stance chosen can be assessed according to two different perspectives: balance and stability. It is necessary to bear in mind the correct definition of the two terms: balance is the act of putting something or putting oneself in balance, stability is the ability to hold a balance by resisting external forces and stresses. A balanced and stable stance therefore allows the shooter to keep a perfect balance in the waiting position, reducing to a minimal extent the swings naturally made by our body, easing the execution of the complete motion without any variation on the posture itself.



In addition, this increases the chances of a reduction of the activation time of the muscle chains involved in the technical gesture and consequently it also improves recoil control.

SHOES

Being able to achieve a balanced and stable stance needs to take into account every part of the body involved for this purpose, however before starting to build an effective shooting position we will analyse the athlete's equipment and in particular what can affect his/her body posture: the shoes.

Shoes play a crucial role because they are the support base for each shooter. They must have a fairly flat sole that does not create major imbalances in the foot, preferring a hard rather than soft consistency; the athlete should use a type of shoe with a shape that is neither too narrow nor too wide in order to avoid constraints or movements of the feet inside that would cause loss of balance and therefore problems in repeating the gesture correctly in a constant manner. However, all these factors are not always sufficient because each shooter has his/ her own shape and it is therefore recommended to carry out an in-depth analysis of the pressures exerted and, if necessary, to wear specific insoles for his/her shooting position, to be used every time entering the platform in order to reduce the tension on the shooter's calf muscles and the rear part of the quadriceps muscle.



CENTRE OF MASS

In order to define the stance on the platform we looked at notions such as balance and stability. In order to achieve a balanced and stable position it is useful to borrow from Physics the definition of *centre of mass*, as to better understand how to move:

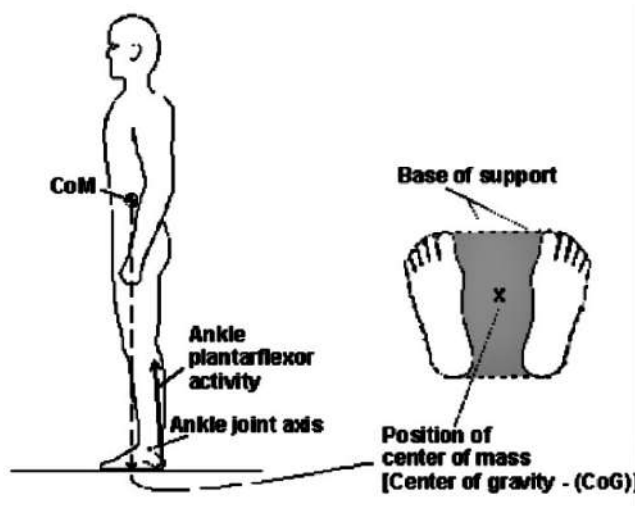


Photo by podiatryarena.com

- The centre of mass of a system is defined as that point at which the system operates as if its mass were all concentrated at that point. In the human body system, it is the centroid of the elements of mass that make up the body (body segments). In the upright position it is normally a point of the

torso at the level of the lumbar region. In the shooting disciplines, however, the reference system to be considered is not only composed of the human body but also of a second body which is the shotgun: this implies the detection of the centre of mass at a different point from a simple upright position of the human body without a gun and, as we will see shortly, this affects the choice of the stance.

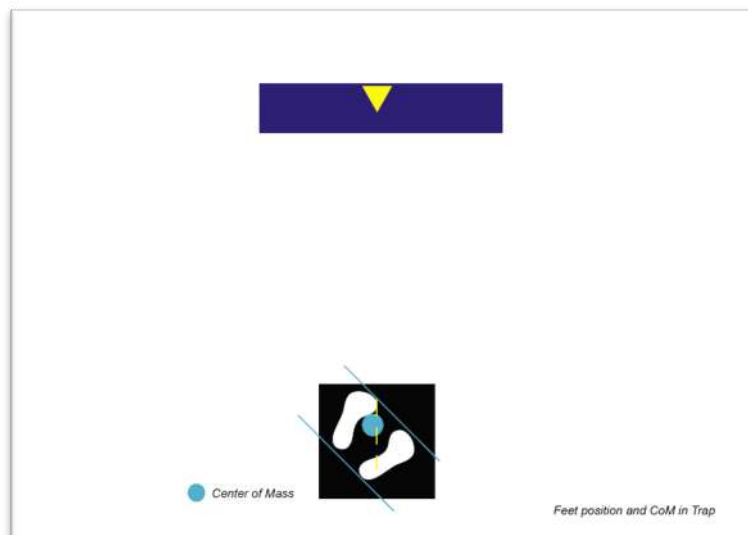
FEET POSITION IN TRAP

In the discipline of Trap it is necessary to hold a waiting position in which the feet take up enough space to allow proper alignment between the heels, pelvis and shoulders. The back of the heels must be aligned as closely as possible with the diagonal of the footplate, but attention must be paid to each shooter's morphological features and to the weapon setting, which can be adjusted as needed. When mounting the shotgun, the shooter's centre of mass

will move slightly forward, so that the ground projection of the centre of mass will be closer to the front foot. Since the centre of mass is shifted slightly forward, it is generally correct to place the feet slightly forward during the waiting position, in comparison with a waiting position without the gun, so that the ground projection of the centre of mass can still fall back into the support base and thus allow the shooter not to lose any balance. At this point you must also take into consideration the rotation that the shooter must perform in order to reach all the clay targets, in fact if the distance between the feet is excessive you will certainly have an excellent stability but you will also have more problems in the rotation caused by the blockage of the knees and pelvis.

In order to provide a better understanding of the above, we can take as an example the structure of a pyramid: this type of building is characterized by a very wide base and a very narrow apex, giving this structure a very high degree of stability, with no chance of any movement. If, on the contrary, we overturn its structure, making the vertex the base and vice versa, we can see that the pyramid will obtain a high capacity of movement, to the detriment of a total lack of balance and stability that will make it fall.

This is an extreme example used to better highlight how the support base, determined by the position of the feet in the present case, affects the



ability to keep balance and the chance to perform the necessary rotations in the execution of the technical gesture. Nevertheless, it should be pointed out that there is no standard position for each shooter, but this is determined after a thorough analysis of the morphological and

physical features until a support base is reached allowing the shooter to have good stability and good rotation capacity to catch each individual plate.

An ideal starting point is to place the heels with a distance equivalent to the width of the pelvis and then make all the necessary changes to achieve the best compromise in terms of stability and movement capacity. To simplify the ability of rotation on each side it is possible to vary the orientation of the toe of each of the feet, taking care not to exceed in order not to cause any blockages on the rotation towards the opposite side of the one you want to improve.

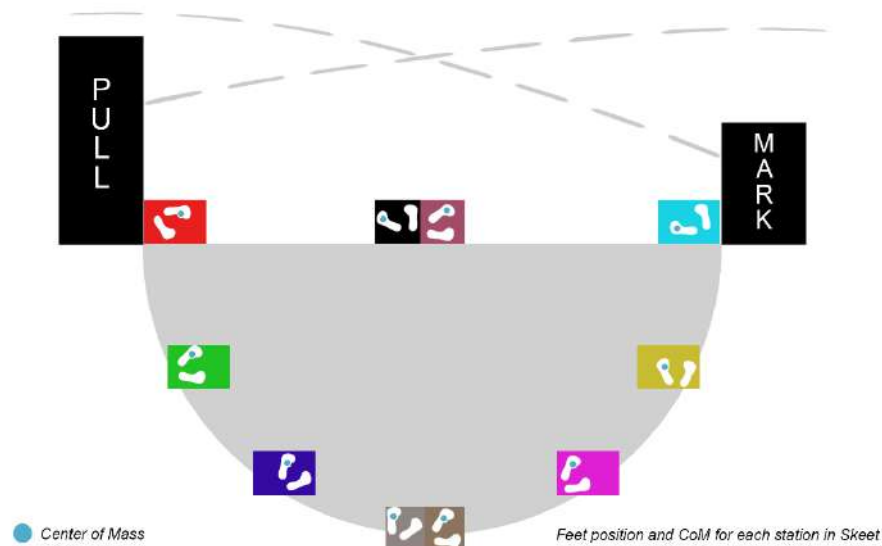
FEET POSITION IN THE SKEET

In the Skeet, as well as in the Trap, the position of the feet must cover enough space to allow, when closing the shotgun, a correct alignment between the feet, pelvis and shoulders.

Depending on the technique used and/or on the specific types of platforms, the waiting position is not always the same as the one in which the shooter closes the gun; it is important to keep the foot-pelvis-shoulder alignment when closing the shotgun because it allows the shooter to have a better stability in the execution of the technical gesture and to flexibly preload the muscle chain responsible for the rotation of the body when it is necessary to move the gun from the closing position to the waiting position, in which the shooter must try to keep a perfect shoulder-pelvis alignment.

The centre of mass, due to the slightly forward leaning gun and torso, is in a more forward position and its projection on the ground must fall at a shorter distance from the front foot than in the Trap, allowing the shooter to have such a balance that he can reach a perfect knee-pelvis-shoulder alignment of the front leg side.

At this point it is clear that the feet cannot be too close to each other because, since the balance is more shifted towards one side of the base, the shooter would have more trouble at holding the balance and therefore, just as in the Trap and considering the rotation to be made in each platform, it is necessary to find the best position of the feet for each shooter that can guarantee both stability and rotation ability, starting once again from a distance between the heels equal to the width of the pelvis and then finding, after a thorough analysis of the morphological and physical features of the shooter, the most functional position.

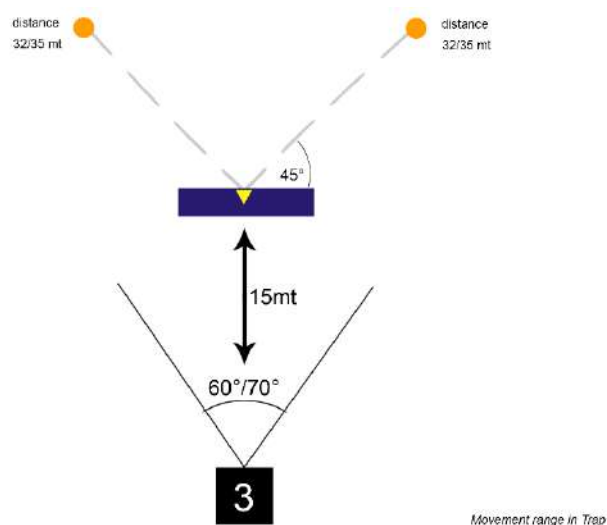


MOVEMENT RANGE AND POSITIONING ON THE PLATFORM

In Trap

The range of movements the shooter must make to follow the target's flight path is a significant element in the development of the shooting position. It must be considered that the clay targets, which begin their run at a distance of 15 meters from the shooter, can have different degrees of angle up to a maximum of 45° on each side and a maximum height,

measured at 10 meters from the exit of the clay target of 3 meters which with an excellent shot are usually fired around the distance - for the more angled clay targets - of 32/35 meters from the shooter. We can define a range of movement within which the shooter must rotate in order to reach each individual target, which can be displayed as an angle that extends up to about 30°/35° on each side of the shooter depending on the shooting technique and time of execution, making the entire range of movement about 60°/70° in total. Movements must be performed in all directions with the same smoothness and timing.



The common firing position, the same for each station, must be oriented towards the exit area of the clay target, always taking into account the area of intersection of the trajectories of the clay targets and the mark to allow a correct aiming of the gun.

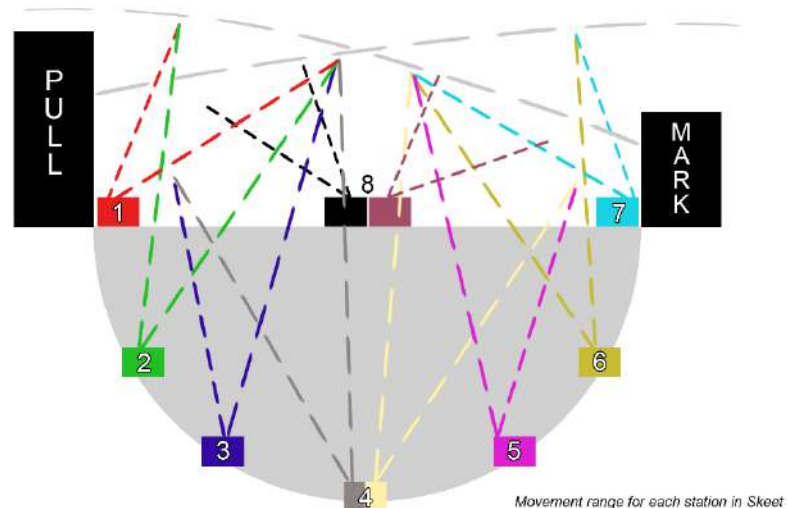
In Skeet

In the Skeet discipline, unlike the Trap, the flight trajectory of the clay targets and their height is always the same while the angle of each platform varies with regard to the exit of the targets. Movement range refers to the total space within which the shooter makes the technical gesture. Generally it is defined by the points where the athlete breaks the targets in doubles, but in some platforms the shooter shoots the second target before the latter reaches

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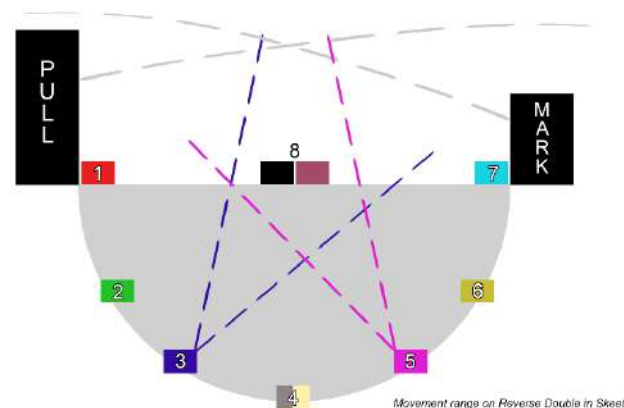
what was the holding point. In these circumstances, the movement range is defined by the shooter's holding point and the point where the first target is fired, just as it happens in single shots on all platforms.

Usually the range of movement goes from the holding point to the point where the first target is fired in the platforms 3, 4, 5 and 8, while in the platforms 1, 2, 6 and 7 it is defined by the point where the first target is fired and from the point where the athlete shoots the second one. Observing each single platform you can notice how the range of movement to perform the technical gesture changes: it is smaller from platform 1 to gradually increase up to platform 4, while from platform 5 to platform 7 it decreases with angles of movement similar to the previous platforms, in particular platforms 5 and 3, 6 and 2 and 7 and 1. For platform 8, the range of movement, as the target is directed towards the shooter, also changes depending on the speed of the mounting, the technique used and the height of the shooter.



Since the range of movement changes and consequently the shooter does not always need the same rotation ability, it is recommended to vary the general shooting position from platform to platform, in particular the position of the feet and the orientation of the body, thus making

small but substantial changes in posture in relation to the movement to be made. When building the waiting position it is necessary to take into consideration two fundamental elements: the speed of the mounting and the movement to be carried out by turning towards the targets, whether single or double. The shooter needs to be able to break the doubles by reversing the movement of the shotgun in an immediate, controlled and reactive way, avoiding an unnecessary waste of time and energy.



Since the direction of the target is known, the shooter may choose where the shot will be fired, orienting his position accordingly in order to achieve the best balance, stability, and control over movement.

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Self evaluation

1. Ready position in Trap and Skeet: define the waiting position in the two disciplines and what the main differences are
2. What are balance and stability and why they are so important in the clay target shooting disciplines

3. Shoes as a useful shooting tool: which are the ones with the best features?
4. Define how the position of the feet affects the shooting stance. What should be taken into account in order to achieve a correct position of the feet?
5. Why is the center of mass important in developing the shooting position?
6. Analyze the range of movement of both disciplines and evaluate how to orient the body for each platform according to it.

4. BODY POSITION



Clay target shooting is a sport where speed, coordination and agility are required.

So let's take a closer look at it: the tool used is the shotgun, which at the time of shooting produces a recoil that the body must absorb without losing control for a potential second shot. In addition, the shooter must

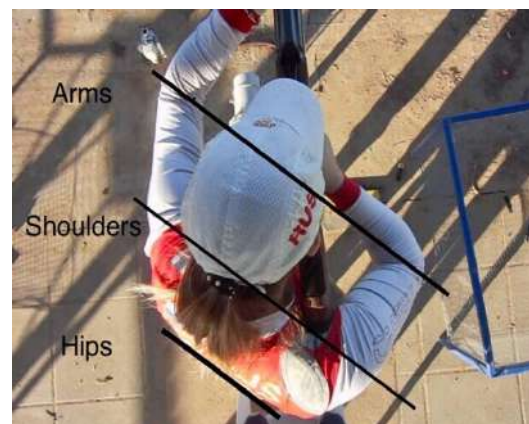
perform the technical gesture by bringing the gun towards the point where he decides to shoot to break the target and repeat it steadily to achieve a high level of performance. The position of the body is the main feature that, in addition to the correct setting of the firearm, allows the shooter to handle the recoil in the best possible way and to perform a smooth and controlled movement.

In order to determine the body position, we will be focusing on the following parts:

- Knees
- Pelvis
- Shoulders

BODY ALIGNMENT

The body's muscle chains must be naturally relaxed and aligned so that the technical gesture can begin with ease and with as little effort as possible, giving the shooter the ability to increase control and reduce the execution time. The back-to-shoulder alignment, together with loosened



muscle chains, allows the shooter to better absorb the recoil, as this will remove all possible contrast areas that the recoil action may produce and which may result in loss of control of the technical gesture, loss of contact between the gun's face and stock, loss of grip of the hands on the gun and the gun on the shoulder.

KNEES

The knees play a fundamental role in order to be able to hold a correct pelvis-shoulder alignment until the end of the movement towards the clay target. Their position must be such that the shooter's legs are relaxed and not stiff and the quadriceps are not under any tension at the same time.



This makes it possible for the lower part of the body to move in combination with the upper part of the body, both during the mounting and the technical gesture, making it easier to keep the alignment and balance of the whole body.

PELVIS



Photo by justdial.com

The pelvis is the connecting link between the lower part of the body and its upper part; managing to keep the pelvis always in the same position allows to preserve the alignment between the lower part and the upper part of the body, both during the mounting and the execution of the technical gesture.

Specifically, a common mistake occurs during the mounting in the Trap, where the shooter is helped by the pelvis when lifting the gun off the ground and then closing it, causing a

misalignment of the body and a shift in the shooter's centre of

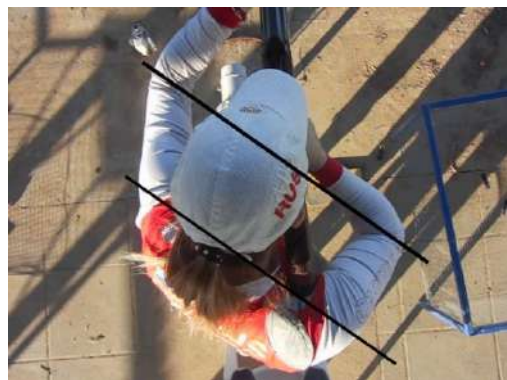
mass with consequent difficulty in maintaining the same balance until the shot is fired. In addition, as the body is not aligned in all its parts, the shooter will execute the movement by making each part of the body work separately from the others and therefore, as there is no synergy in the movement between the lower limbs, torso, shoulders and arms, the result will be a poorly smooth and "jerky" movement, as well as a rather imperfect recoil absorption. In the Skeet, attention must be paid to the platforms where the shooter is used to perform a rotation from the phase of closing the gun to the waiting phase, because if this rotation starts from the pelvis, the shooter risks getting the line of the pelvis more oriented towards the cabin than the shoulder line, with a consequent delay in the initial movement of the upper part of the body, as it will have to realign with the lower part.



**Rotation from the closing point of the shotgun to the holding point*

SHOULDERS

Lastly, the position of the shoulders must allow the shooter to achieve a correct alignment with the pelvis and must also be in such a position that the angle being shaped with the gun is neither too open nor too closed.



Shoulder alignment in Trap



Shoulder alignment in Skeet

In doing so, the shooter can reach the best alignment of the face and eyes with the line of the rib, as well as a better recoil absorption capacity, since the support base on the pectoral muscle of the recoil pad can also be used to best effect.

SHOTGUN MOUNTING IN TRAP

The mounting phase in the Trap takes place before the call of the target and is thus an element not to be underestimated in the construction of the waiting position. A good mount should allow the shooter to flex the thoracic spine and reduce the lumbar curve, as this enables the shooter to keep the alignment between the pelvis and the shoulders even after finishing the mounting phase. The different mounting techniques can be summarized in the following 3 styles:

- Mounting from above;
- Frontal mount;
- Bottom mount.



The mounting from above gives a perfect support of the recoil pad on the pectoral muscle, a shorter movement to bring the face on the stock and at the same time it allows the neck muscles to be more relaxed and the arms and shoulders less rigid, as the dorsal muscles

are able to support the weight of the gun more easily. As a result, the dorsal muscles will activate and support the shooter in the execution of the action. When closing the shotgun, the tip of the barrels must be at eye level and then accompany the gun on the shoulder with both hands, keeping the angle of the gun unchanged until the stock rests on the pectoral muscle. If the tip of the barrels, at the moment of closing the shotgun, is placed higher or lower than eye-level, it will be more difficult



to carry out the mounting keeping the gun at the same initial angle, with a resulting obstacle in finding the correct support of the stock on the pectoral muscle.

The positive benefits of the frontal mount, which involves aiming the shotgun directly towards the exit point of the target, are certainly those of having a better visibility, as the gun is carried on the shoulder without changing angle and therefore the head and eyes remain in the same initial position and with an alignment with an excellent line of sight from the beginning. In addition, the movement to be made to reach the waiting point is shorter and therefore the shooter can coordinate more easily. The mounting action must be carried out with both hands accompanying the gun, bringing the torso slightly forward at the same time in order to activate the back muscles that will support both the gun and the execution of the technical gesture, while achieving adequate balance.



Finally, the bottom mount is used more rarely since it does not offer significant advantages. As concerning the mounting in the Skeet, which is performed during the initial movement towards the clay target, it is not the subject of this course consisting in the construction of the ready position technique.

SHOOTING VEST

The shooting vest is an essential part of the equipment, which has a significant influence on the technical gesture. Choosing the right size prevents the appearance of folds in the fabric, which could cause an unsuitable position as well as a loss of grip of the shotgun both in the waiting position and during the transition motion towards the target. It is important to emphasize that a correct grip of the stock on the shoulder gives the shooter positive feelings and provides him with mental reassurance during the mounting phase. In Trap discipline, it is recommended to choose a fabric such as leather or other leather-like material for the external part of the vest in contact with the gun, so, basically, a fabric with such features as to allow the gun to stay locked immediately on the shoulder, while the neckline of the vest should not be too prominent. In Skeet discipline it is advisable to choose a cotton fabric, as it must allow the stock to slide well during the mounting, it must also have the lining up to the outer edge at shoulder height as some shooters hold the gun more externally towards the arm. Moreover, in Skeet, as regards the women, the shooting vest must be tight on the hips too, otherwise during the mounting phase the shotgun could lift creating discomfort to the shooter.

Pockets should be large and low to ease all the shooter's movements and give him/her the opportunity to have more cartridges with him/her; this is particularly useful for those shooters who need to avoid distractions when picking up additional cartridges during the series, as well as for keeping the vest tighter.

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Self evaluation

1. Consider the importance of the body position and describe the advantages that the full body alignment gives to the shooter

2. What role do knees, pelvis and shoulders play in the body position?
3. Analyze the different types of gun mounting in the Trap and describe the advantages for each of them.
4. Vest as a useful shooting tool: which features does it need to have? Is there any difference between the two disciplines?

5. ARMS AND HANDS POSITION

The arms and hands are the parts of the body linking the shooter to the shotgun and play an important role in both mounting and moving towards the target, as they allow the shooter to hold the gun in contact with the shoulder and face, to keep a correct waiting position and to point the gun during the execution of the technical gesture. It is important to determine both the position of the arms, taking into account in particular the position of the elbows and the angle that they create, and the position of the two hands, one on the fore-end and the other on the pistol grip of the shotgun.

ELBOWS AND ARMS POSITION

In both disciplines, the arms should be in a 'neutral' position, with an elbow opening angle which may ease this position. A neutral position is a position in which the shooter should make no effort to hold it.

The height of the elbows is best below the line of the shotgun, having them possible at the same level so that the arm muscles are not the only ones involved in supporting the weight, but are supported by the back muscles and will therefore make less effort and stay more relaxed. On



the other hand, the same benefits also affect the starting movement, which takes place without obstruction and in a more natural way; if the muscles of the arms are under tension, in fact, the movement will be more sudden, with the risk of skipping from the starting point to the firing point without control over the movement itself.

For the same reason, the shooter must avoid over-tightening the gun in the shoulder, as this would cause a misalignment of the shoulder line, though he must be sure that the gun is firmly placed in the shoulder pocket.

HAND GRIPPING THE FORE-END

The positioning of the hand on the fore-end should take into account several different elements, such as the alignment with the other hand, the distribution of the weight of the gun as evenly as possible and the ability to start the movement with less effort and more control.



Alignment with the hand holding the pistol grip of the shotgun allows the arms to stay aligned and move in the same plane of rotation while moving.

The hand placed on the fore-end can be put, unlike the hand on the pistol grip which has a fixed position, in different points; movement of the hand on the fore-end means to move closer or further away from the hand on the pistol grip and this causes a variation in the balance of the shotgun with regard to the hands; i.e. if the shooter puts his hand on the fore-end in a very backward position, and therefore closer to the hand on the pistol grip, the weight of the gun will be distributed more on the front hand, making it easier to support the gun but more difficult to start the movement with less control over the gun. On the contrary, with the hand in a very forward position, the weight of the gun shifts more on the rear hand, thus making it easier to start the movement and with less energy expenditure, but with a position that is certainly more uncomfortable for the shooter. In addition, the movement of the hand on the fore-end involves a change in the opening angle of the elbow which could cause muscle tension in the shoulder and/or back muscles, so the positioning must also take this aspect into account; with an excessively forward positioning the major risk is to start the movement towards the clay target from the arms, having trouble in keeping the barrels on the



Photo by insidethegames.biz

target flight line and losing alignment between the arms, shoulders and torso as well as between the eyes and the rib.

The best solution, as always, is to find a position that allows the shooter to get the best compromise to meet the many elements involved. There is another

important detail to consider: the hand must have a firm grip on the fore-end with all fingers fully in contact, but at the same time must avoid to

excessively tighten it, otherwise the muscles of the arms and shoulders will be contracted, with the risk of generating a vibration when waiting before calling the target, making the shooter lose the chance of a soft start aligned with the target flight line. On the other hand, if the fingers are not totally in contact with the fore-end, the initial movement may not be very steady and, then, when the fingers will automatically start to tighten the handle of the fore-end, they will undergo a sudden acceleration resulting in loss of control of the gun with respect to the trajectory of the target.

Finally, it must be pointed out that the length of the stock may affect the position of the hand, in fact with a longer stock, the hand must remain in a slightly backward position, otherwise the angle of the elbow will be too open with consequent tension of the muscles of the arm, while with a shorter stock the hand must remain further forward because, on the contrary, the angle of the elbow will be too closed.

All the information can be used for both Trap and Skeet disciplines.

HAND ON THE PISTOL GRIP OF THE SHOTGUN



Wrist 'breaking' due wrong alignment of the hand, on the grip, and the arm

The position of the hand on the pistol grip is fixed and is largely determined by how the pistol grip is shaped. It is advisable, when designing and setting up the stock, to consider a custom-made pistol grip for each shooter so that it fits his hand perfectly, otherwise the shooter will be forced to choose a position that is as

comfortable as possible, but not quite able to do so, with the risk of some sort of imbalance.

The hand on the pistol grip must be in a suitable position to keep it aligned with the shooter's fore-end, thus avoiding a wrist 'breaking', and it must allow the finger to be placed comfortably on the trigger, giving the shooter the ability to pull the trigger without using too much strength in the hand or finger.

To make traction easier, it is recommended to keep a parallel alignment between the fingers of the hand and the barrels of the gun. The hand on the grip, just like the hand on the fore-end, must hold a natural grip while not tightening too much, with



the thumb wrapping around the stock. If the shooter tightens the grip too much, as a result, the muscles of the arm become tense to the point of blocking the shoulder, which, as we have already seen, causes problems to the shooter when starting the movement as he is forced to overcome the resistance created by this tension.

All the information can be used for both Trap and Skeet disciplines.

FINGER POSITION ON THE TRIGGER

Many shooters tend to place their finger on the trigger instinctively, without paying attention to its position. This is partly due to a wrong grip on the pistol grip which leads the shooter of each discipline to adapt to find the proper comfort, as we have described in the previous section.



The position of the finger on the trigger is a very important issue that should never be ignored, because an inappropriate positioning can cause a delay in traction, micro movements and/or unwanted small movements of the barrels or troubles during the second shot; moreover, the shooter could get injured on the soft part of the fingertip.

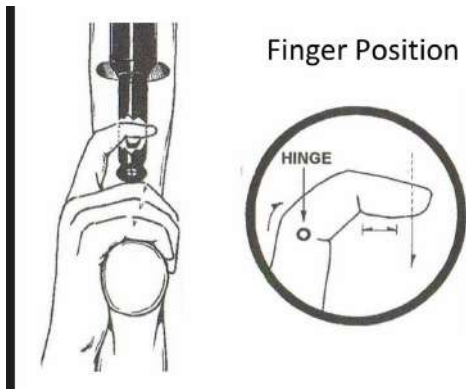


Photo by Shannon Carlton

The best position to adopt is certainly the one in which the crease between the third and second phalanx is placed on the trigger blade, with the third phalanx staying under pressure on the trigger, ready for a quick and short traction, powerful on both the first and the second shot, without stress that could interfere with the

alignment of the shotgun barrels with the hand itself and with the target flying line.

The finger, in order to get immediate and effective traction, must adhere with the fingertip on the central part of the trigger blade, in fact if the finger is placed too high or too low on the blade the shooter will need to push with more power to achieve traction.

In order to better comprehend the above, we will analyse the drawbacks resulting from the finger positioned on the trigger more backward or more advanced than the perfect one.

Let's take a look at the first case: by adopting a more backward position, the shooter's fingertip is touching the side of the trigger blade, therefore the traction is delayed because the pressure on the trigger is not applied exactly in the same direction in



which it will move, but on the side-section, taking more time and strength for the trigger to be pulled.

In addition, two further points need to be considered:

- By pushing the trigger blade sideways, the gun is moved slightly with the risk of misalignment of the eyes with the rib;
- Since the tip of the finger is rich in nerve endings, the shooter may experience small tremors or micro movements that may result from excessive sensibility under pressure.



Let us now consider the second case: the position of the finger too far forward, with which the shooter is surrounding the trigger up to touch it with the second phalanx. In doing so, the moment he pulls the trigger, the finger will make a more complex movement before it triggers, which results in a delay in firing. In addition, after the first shot, as the shooter does not have the strength needed to pull the trigger instantly, he is

forced to extend his finger completely in order to trigger the second shot, with a longer execution time.

These limitations will also make it more difficult to keep contact between the cheek and the stock, and in some cases, when the finger is in an excessively forward position, the inability to fire the second shot.

This section is on ISSF Course PowerpointPresentation.pptx from slide 20 to 26

Self evaluation

1. What is a neutral elbow position and what are the implications of this position?
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2. Position of the hand on the fore-end: what determines the choice of the position to be adopted for the hand on the fore-end and what are the consequences of using different positions.
3. What criteria can be used to evaluate the position of the hand on the pistol?
4. Explains what implies a proper alignment between the two hands.
5. Analyze the different finger positions on the trigger and describe the pros and cons of each of them

6. HEAD POSITION



In both disciplines the correct position of the head must be upright on the vertical axis, projecting the view in a direction parallel to the ground and the barrels line, so as to allow a proper search of the alignment of the eyes with the rib.

The importance of this feature should not be underestimated because in addition to the traditional biomechanical and technical rules of the waiting position another essential one should be considered: the oculocephalic reflex (OCR or oculo-cephalic reflex).

In an attempt to summarize its meaning, we can define OCR as a neurophysiological link connecting eyes, vestibular system and cervical proprioception that aims at keeping the image stable on the retina during eye, head and torso movements when fixating static and/or moving objects.

In both disciplines the shooter on the platform must interpret through the visual system the information regarding the flight path of the outgoing clay target and organize a physical response in the shortest time and in the most precise way possible.

It is therefore crucial to evaluate and optimise the integration between head position, eye position and barrel position.

POSITIONING IN TRAP

In the Trap discipline, particularly when using an appropriate waiting position, the head, as already mentioned, is straight and the cheek is entirely placed on the stock of the gun. This allows the visual system to work with an ocular activation that



minimally interferes with the performance and is characterized by a minor and controlled vestibular activation (balance system management), skeletal muscle (neck and shoulders) and, most importantly, ocular motility.

This position must be reached in a spontaneous way and without forcing, this is possible thanks to a correct movement of the head towards the stock during the mounting phase, as well as to

a proper setting of the shotgun. The shooter, in fact, can perform a perfect movement to position his head on the stock, although an incorrect setting of the stock could prevent him/her from having a perfect eye-rib alignment. The outcome will be an effort to compensate with the head in search of a more suitable position but hard to hold, compromising the smoothness of movement due to the stress points on the neck and shoulders that will be produced and an OCR operating in a way that is not performance-oriented.

CHEEK POSITION IN TRAP

The cheek is the part of the face in contact with the stock of the gun. It can be placed in different spots, providing the shooter with different perspectives. It is recommended to place the cheek on the stock until it touches the cheekbone and the jaw, in order to keep a correct alignment at all times. It is necessary to evaluate the morphological features of the shooter in order to establish which position will give him the most benefits, trying to find the position that allows him to keep his neck relaxed and an excellent view.



Rear cheek position



Neutral cheek position



Front cheek position

EYE ALIGNMENT IN TRAP

As highlighted above, a crucial element for achieving an ideal shooting position is to keep the visual system as parallel as possible to the barrel line.

An extremely important issue is the determination of eye dominance and the search for alignment of the dominant eye with the rib through the position of the head.



The dominant eye features are:

- prevailing central vision management
- speed in catching the fixation on moving objects
- higher quality perception of colours



Photo by osteopatiaterranova.it

Our brain, in relation to these features and considering the excellent quality of useful information received thanks to them, always tries to hook the target with the dominant eye, which, if kept perfectly aligned with the rib, allows to hit the target in the useful firing area.

Problems may arise when eye dominance does not correspond to the mounting laterality.

As mentioned earlier, in fact, the brain will try to drive the dominant eye into fixation by creating an inadequate position of the head and the activation of the oculocephalograph.

When the vestibular system is active and the muscles of the eyes, neck and shoulders contract to compensate, there will be no smooth movement from a biomechanical point of view.

In addition, from a sensory point of view, the condition will obviously not be ideal, as the eye not being aligned with the rib will create a parallax issue which will not allow the shooter to properly hit the firing area.

Let's take a few examples:



In this case the shooter does not have a good view, especially on high targets on which he may need to take his head off the stock to keep the target within the field of view.

In fact, he will have to force the motion of his eyes upwards by activating the OCR thus

creating tension on the muscles of the eyes, neck and shoulders.

Here, the shooter has the best support on the shotgun, without any forcing and with the best possible view.

This makes it easy to hold the same position until the end of the movement.



POSITIONING IN SKEET

In Skeet discipline, during the waiting position, the head is not yet on the stock, but it is necessary to set an excellent waiting position, helpful for the shooter to perform the mounting movement easily, allowing the gun to make immediate contact with the face and keeping the line of the eyes on the same flight line as the target.



As already mentioned several times, the head must be straight on the vertical axis although, in this discipline, it is correct to move it slightly forward to help the mounting, the cheek-to-gun contact and to ensure a good balance, always keeping the eyes as parallel as possible to the ground to have more

control over the activation of the OCR. In this case too, it is essential to have a stock setting that can give the shooter the possibility to execute the mounting without any forcing and therefore without misalignment or tension of the shoulder or neck muscles.

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Self evaluation

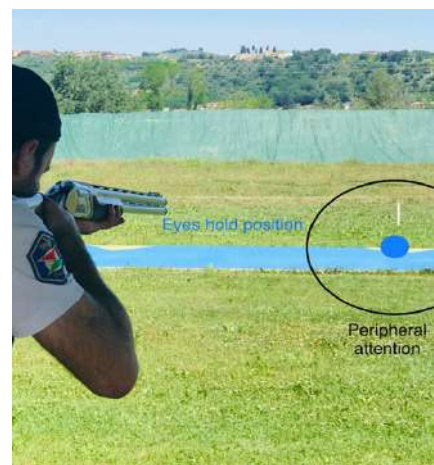
1. Describe a proper head position in both disciplines
2. What is the meaning of OCR
3. What are the main features of the dominant eye
4. Dominant eye and eye-gun alignment: analyzes the impact it may have on head positioning.
5. List and describe some different positions of the cheek on the stock

7. GUN HOLD POSITION

The choice of where to point the shotgun requires an examination of both the shooter, with regards to his/her features, and a number of external factors.

In the discipline of Trap, for each position, there are 3 different trajectories.

It is possible to identify an area within which the barrels of the gun can be set in such a way as to be able to detect the path of the 3 targets (left, right and centre) always close to the tip of the barrels, so that the shooter can perfectly read the trajectory



of each individual target and have the chance to start the movement towards the target in a smooth and controlled manner.

In addition, the waiting position of the shotgun is closely related to the area of the sight, in fact, if the angular difference between the barrels and the central point of view is too high, the shooter may lose the connection between the barrels and the clay target,

while if the difference is minor, the shooter risks to read in advance the exit of the target and to move the barrels by skipping the target.

A higher shotgun position can be called a "high barrel position".

In Skeet, since the trajectory of the targets is known, the shooter must position the barrels at such a point as to allow him/ her to complete the mounting in a smooth and natural manner, with the option of always managing the movement with the correct amount of time in advance of the target.

A "too closed" barrel position towards the cabin will cause the shooter to make a too quick mount, with the risk that the target will cross the barrels before the shooter completes the mounting.

With the barrels in a "too open" position in relation to the cabin, the shooter risks watching at the target fly towards the gun hold position for too long, making it difficult to start the mounting at the right time and therefore not being able to keep the anticipation time on the target sufficiently.



As a general rule, the tip of the barrels must be placed at the same eye level in order to be able to correctly read the flight line of the target, thus preventing the barrels from interfering with the view and achieving a valid and immediate eye-barrels-target alignment. In addition to positioning on the same line of sight, the barrels must aim in the direction of the flight line of the target so that the correct anticipation can be detected at the end of the mount. It can be easily guessed, therefore, that for each shooter the waiting position varies according to his/her own features, though, as already mentioned at the beginning of this chapter, a few external elements must also be considered:

- Differences depending on the type of field
- Machine features

- Crossing points (Trap), targets setting (Skeet)

DIFFERENCE DEPENDING ON THE TYPE OF FIELD

Trap

In order to determine the aiming height of the barrels, the features of each individual field play an important role, in fact, depending on the location you are in, you can choose to vary the aiming of the gun.



In a field where the clay target thrower platform is higher than the ground behind it, it is recommended to adopt an aiming near the upper edge of the platform itself, because with a 'high barrel' pointing the shooter will catch the target very late,



when it is too far away for an excellent shot, because the first part of the flight of the target is covered by the platform.

For this reason, whenever there is this difference in height between the thrower platform and the ground behind it, it is essential to start the movement as soon as the target comes out of this 'blind' zone, without letting it go any further away.

The situation is different whenever the clay target thrower platform is located at the same level or lower as the ground behind it, in which



case the shooter could also choose a 'higher barrel' pointing, not facing the aforementioned problem.

Skeet



The features of a Skeet field influencing the positioning of the gun are mainly due to the cabins and to the position of the machines within them. In fact, if the machines are in a position closer to the exit gate, the shooter will feel the target come out more

violently, as the initial speed, just released, is certainly higher.

In this case it is recommended to keep the shotgun, while in a waiting position, further away from the cabin in order to be able to react while keeping the correct anticipation time.

In some fields it is possible to find the machines in a slightly higher or lower position than the standard one, where the flight paths of the targets are subject to variations, for example higher or flatter trajectories, for which it is necessary to adapt the positioning of the shotgun.

Some shooters prefer to set the gun sight above the viewing area and then start the movement as soon as they hear the sound of the machine throwing the target off, but they may experience problems when in a field with cabins, e.g. in masonry, the noise is covered.

In this case it is appropriate to lower the positioning of the gun in order to start the movement only when the shooter can visually detect the target without bringing the gun above the flight line of the target.

One other possible element which may affect the positioning of the gun is the background, in fact if the shooter is in front of a 'dirty' background with trees or items which may disturb the

view of the clay target during its flight, the shooter may consider moving the gun further away from the cabin.

FEATURES OF CLAY TARGET THROWER MACHINES

Another element which may affect how the shooter will place the gun during the waiting position is given by the type of thrower machine in the field. You may find a machine throwing the targets with different initial speeds or with micro lags caused by the machine itself or by the connection between the machine and the control unit, so it may be useful to vary the position of the gun also taking this element into account.

This section is on ISSF Course PowerpointPresentation.pptx from slide 33 to 36

Self evaluation

1. On the basis of which elements is the gun hold position defined?
2. Describe how and why the background and the thrower machines can make the gun hold position change
3. In the Skeet, what a too closed position towards the cabin can lead to? And a too open position?
4. In the Trap, what is the meaning of high barrel aiming? What impact could it have?

8. EYE HOLD POSITION

A proper positioning of the head allows the shooter to reach the necessary eye alignment to find an area on which to focus his/her central and peripheral attention in a natural way with no need to compensate with eye or cervical movements.

In the two disciplines, both eyes must be open and kept in a central and peripheral active state of vision until the call is made.

By visual area we mean an exploration area where the eyes move through a series of short, continuous and unconscious micro-movements called "microsaccades", required for the perception. By active vision, instead, we mean the ability to activate the visual system characterized by a high visual attention, in which every perceptive detail of oneself and of the environment relevant to our purpose is captured, processed and memorized.



In this state the memory of every detail and every movement is made available for every relevant situation leading to a reduction in the time of automation and a high awareness of the gesture resulting in a condition of positivity and self-esteem. This ability is not activated automatically, and it requires a work of evaluation, re-

education and enhancement of the visual system through a specific training carried out by vision professionals.

The visual area is closely related to the positioning of the barrels, the shooter needs to keep an angular distance between the gun and the eyes to ensure that he/she can have full visual control of both the target release and the tip of the gun barrels through peripheral attention.

Peripheral attention allows to read the information related to direction, speed, depth and distance of the moving object; the properties of visual-motor coordination depend on the rapidity of perception and the efficiency in the use of peripheral stimuli.

The spatial resolution, in fact, decreases by moving from the fovea (central point of maximum quality of the vision) towards the retinal periphery where instead progressively increases the temporal resolution which is, in other words, the capability of perceiving and reading the movement.

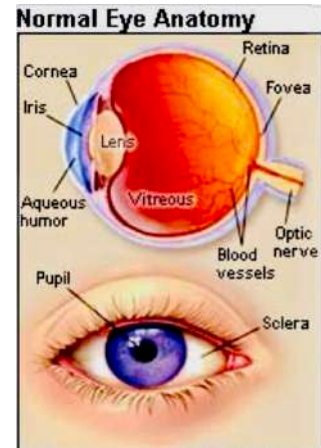


Photo by webmd.com

Trap



In the Olympic Trap the best area of view is certainly within the area where the clay targets cross their trajectories, it is also possible to determine an area within which the barrels of the gun can be positioned so as to be able to detect the transition of the 3 clay targets (left, right and central) always

close to the tip of the barrels.

Once the bid is placed at the waiting point, the eyes will shift their attention, from the barrels to the crossing point of the targets about 5-6 meters away from the hole, always keeping the

perception of the tip of the barrels within the peripheral field of view. This allows the shooter to instantly acquire, through the use of peripheral attention, the correct information regarding distance, speed, angle and position of the target, thus simplifying the start of the movement towards the target in a smooth and controlled manner.

However, if the shooter should choose a high barrel gun position, i.e., positioned above the trajectory intersection area, it is not convenient for the shooter to keep the viewing area within the trajectory intersection area of the clay targets, as the visual line would cross the rib's visual line resulting in a loss of eye alignment and difficulty in keeping all elements under control during the movement, especially when dealing with upright clay targets which rise up to 3 metres and in order to follow them with the eyes the shooter must cross a blind spot as the clay target approaches the area targeted by the barrels thus reducing the view.

If, on the other hand, the placement of the gun is too far below the trajectory intersection area and the shooter keeps his/her eye on the trajectory intersection area, the angular difference between the barrels and the visual line will increase thus risking to lose the gun from the field of vision, starting the movement with no control and in most cases late.

The connection between the eye hold position and the gun hold position is fundamental for determining the vision area, in fact any influence on



one or the other certainly has a non-negligible impact on both. Another element to be taken into account is the height of the eye on the ribs. According to this position, in addition to changing the moment when the shooter decides to pull the trigger, he/she must be careful to

always keep the visual line as parallel as possible to the barrels, without adopting an overly high or overly low position. The best compromise is to keep an eye height on the rib with the iris resulting to be tangent to the rib line, this position allows the shooter to more easily keep the visual line parallel to the barrels and have the best control in the movement phase. This solution may vary if using a high sight, for which it is preferred to keep the eye a few millimeters higher than the line of sight in order to have a better peripheral vision of the area below the gun, or a lower sight, for which it is advisable to lower the position of the eye a few millimeters in order to achieve greater control of the gun sight. The eyes height may be influenced also according to the type of rib used.

Skeet

In the Skeet the visual area is closely related to the positioning of the gun and the initial movement towards the target is fundamental to allow the correct connection of the barrels with the target and the subsequent control up to the firing point.

In order to make a correct initial movement, the shooter needs to be able to read the information coming from the target



to be able to read the information coming from the target through the area defined by the cabin and the positioning of the barrels.

During the closing position of the gun, the shooter must align the line of sight with the ipsilateral eye (same eye as the shoulder side) and hold this alignment until the waiting position.



At the end of the waiting position and before the call, the shooter will move his/her gaze approximately in the direction of the exit of the clay target or near to the tip of the barrels, depending on the techniques and platforms from which the shooter is firing, keeping full visual control of both the exit of the target,

where possible, and the tip of the gun through peripheral attention.

The aim is therefore to be able to keep an angular distance between the barrel and the eyes so as to have under control on a visual-perceptual level and on a visual-spatial level all the elements useful to perform the correct technical firing gesture. In doing so, being aware of the trajectory of the targets and having under control all the items of interest, the shooter will know where to position the barrels so as to complete the mounting phase in a smooth and natural way, with the chance to always manage the movement with the proper anticipation time on the target.

It is important to bear in mind once again that a "too closed" position of the barrels towards the cabin will cause the shooter to undertake a too rapid mount, thus running the risk of the target passing the barrels before the shooter completes the mount, while with the barrels in the "too open" position with relation to the cabin, the shooter risks staring for too long at the target flying in the direction of the waiting point for the barrels, thus having difficulty in starting the mounting at the right time and therefore being unable to keep the proper anticipation on the target.

It is therefore essential to enhance the shooter's peripheral attention through specific training, although, since the platforms are different from each other, attention must be paid to the differences between the various positions and where to focus the visual area.

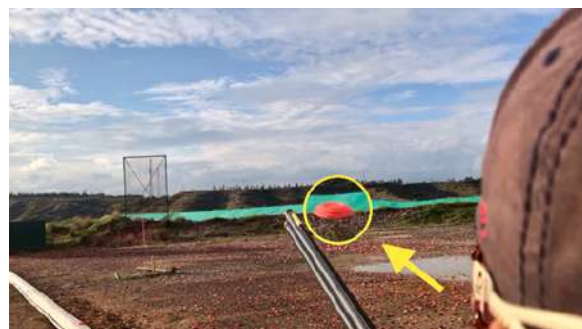


Specifically, from platform 1, the visual area cannot obviously be on the cabin, but it must be oriented in the direction of an area above the tip of the barrels waiting for the clay target; this area can be at a height more or less distant from the tip of the barrels depending on the technique used and the features of the shooter. From platform 2 the shooter, according to his/her technique and features, can focus the sight on the area between

the cabin and the barrels; the latter option can help him/her to avoid the initial movement of the clay target, which, considering the acute angle between the cabin and the platform, is perceived to be faster than in the other platforms.

On platforms 3, 4 and 5, during the waiting position, the visual area is oriented in the direction of the first target's exit cabin. From platform 6 the same considerations apply as for platform 2, so that also in this case, depending on the shooter's technique and features, the sight can be towards the cabin or in an area between the cabin and the barrels.

As with platform 1, from platform 7 the shooter does not have the option of placing the sight towards the cabin. The sight must therefore be on the side of the gun, near the tip of the barrels and on the flight trajectory of the clay target.



From the 8 Pull, again depending on technique and features, you can focus your sight in the direction of the cabin or directly above the tip of the barrels towards the trajectory of the target while paying attention to keep the exit of the target within your visual field.

Finally, from 8 Mark the visual area must always be in the direction of the cabin with the peripheral attention paid to checking the positioning of the barrels.

It should be remembered that, in general terms, this can apply to both right-handed and left-handed shooters, paying attention to the appropriate adjustments both from a technical and perceptive-sensory point of view.

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Self evaluation

1. What is the visual area?
2. Describe the connection between the line of sight and the positioning of the barrels.
3. Explain the meaning of active vision and the advantages it brings
4. Central vision and peripheral attention: what exactly are they and how are they used in shooting
5. Analyse the height of the eye on the rib
6. In the Skeet, define the eye hold position for each platform

9. CONCLUSIONS

The construction of the ready position requires attention to multiple features, but it is necessary to maintain an overall vision that allows the achievement of harmony and excellent cooperation between the different components of the body-gun system in order to prepare in the best way the core aspect of the shot, that is the movement performed to break the target.

We can compare the construction of the ready position to the creation of a tailor-made suit: the more it will correspond to the anatomical and morphological features of the athlete, the more efficient and functional it will be for the task in hand, guaranteeing the highest levels of balance and stability with less energy expenditure from both a physical and mental point of view.

The use of the principles of biomechanics and physics supports the coach in defining the key elements of each athlete and then to tailor his or her personal style on them, thus avoiding the use of predetermined and preset techniques and styles that could be poorly suited to his or her personal features.

Each coach will find his/her own personal communication channel and teaching methodology and the scientific approach will allow him/her to build the whole training upon a solid foundation.

1. METHODOLOGY OF APPROACHING AND TAKING SHOOTING POSITION

When working with a shooter, be it only a beginner or an established champion, a methodical approach and a well-defined strategy are necessary in order to make the work more organised, effective and constant over time through the gradual and consistent growth of each individual skill.

Following a well-conceived methodology allows the coach to develop every single element, whether technical, mental, physical or sensorial, with a predetermined order, with which the coach establishes a schedule of interventions to be made and the timing to be followed.

At the same time the shooter, knowing the growth path to follow, prepares himself in the best possible way and is more focused on every single step of the training.



The first step is certainly to better know the shooter, considering that you may be dealing with a shooter with whom you are working for the first time or a shooter with whom you have already worked. From a shooter with whom you are working for the first time you need to learn what his background is, his sensory features, his past experiences, his results and what he thinks

of himself as a shooter, what are his strengths and weaknesses, while with a shooter who is
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already 'known' and assessed, you will proceed with observations relating both to his past results but also to the consultation of his training diary and the evaluation of the coaching carried out up to that moment.

Once this preliminary information has been collected, it is advisable to observe how the shooter behaves on the platform by making a series or number of shots sufficient to note down the critical points and strengths we have observed. At the end of the series, the coach will explain what he has observed to the athlete, starting a discussion with him on the changes to be made and the aspects to be strengthened, explaining also the reasons for doing so and what the advantages will be in the short, medium and long term.

In the shooting technique, as already mentioned, it is important to follow an actual schedule for the interventions that you decide to make, with some aspects that will have priority over others as that can be considered as the basis on which to build the whole technical gesture. Before defining this schedule you must verify, in the case of a shooter who is not yet known, his type of dominance: ocular dominance and hand dominance. Ocular dominance allows us to identify which eye primarily manages the fixation. The characteristics of the dominant eye are:

- Prevalent central vision management
- Speed in taking fixation on moving objects
- Higher quality perception of colours

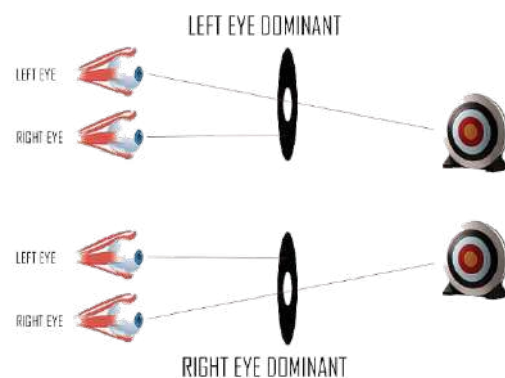


Photo doctorinprogress.com

The brain, in relation to these features and

considering the excellent quality of useful information it receives thanks to them, will always

try to catch the target with the dominant eye, which, if kept well aligned with the rib, will allow the shooter to hit the target in the useful firing area. Ocular dominance can be studied with different tests, and each of these will allow you to establish important features:

- Monocular vision tests, which are used to identify the preferred choice of the eye. By preferred choice we mean which eye is chosen in monocular activities such as looking through a monocle or a slit. This ocular choice, which is totally unconscious, is a kind of brain specialisation which in most cases results in the use of one part of the body in comparison to the other.
- Binocular vision tests, which are used to define the dominant eye. The dominant eye is the eye which actually has, in binocular vision, dominant properties compared to the other eye. The information from the dominant eye activates a long area of cortex in the brain and the impulses received are processed faster, with a processing capacity of about 14 milliseconds faster than the non-dominant eye. In addition, the images from the dominant eye are of a better quality than the other. An example of a binocular test is to extend the right arm in front of your face at eye level with the palm of the hand facing upwards and with the index and middle fingers creating a V and, keeping the eyes open, try to insert a vertical object inside the V formed by the two fingers at a distance of about 6.7 mt. The test must then be repeated using the other arm; the dominant eye will stay aligned between the two fingers.
- Evidence requiring hand intervention (eye-hand coordination), which generally shows which eye is dominant. An example would be to take a sheet of paper with a hole in the middle and, placing it in your hands with your arms outstretched in front

of your eyes, stare at an object through the hole. At this point, if you bring the sheet closer to your eyes as you continue to stare at the object through the hole, you can see that the hole will align with the dominant eye.

Testing hand dominance allows you to identify which hand is preferred in most activities.

The straightforward way is to ask which hand the shooter writes with, though this is sometimes not accurate, because there are cases where, as a child, the shooter was 'forced' to write with the opposite hand to the one with which he was naturally inclined to do so.

For this reason it is necessary to check this dominance more accurately to be certain of the real dominance of each shooter. Hand dominance is of fundamental importance in relation to eye dominance, in order to better understand if there are any mismatches between them and therefore to take this aspect into account in the evaluation and construction of the shooting technique.

Once the tests on the basic dominance have been completed, it is possible to proceed with the construction of the plan to be followed in order to make the technical changes. As for a

house or any type of building, the shooting position needs a solid foundation to guarantee stability and, at the same time, the ability to perform the technical gesture towards any target that may appear. In order to do so, the work plan can only proceed, just like in a house, from the bottom upwards, with a pre-set schedule, as outlined in the following phases of construction of the shooting



position: feet position, body position (including knees, pelvis and shoulders), arm and hands

position, head position, gun hold position and eye hold position. It is necessary, for each shooter, to examine his or her position as a whole, and then go into the details of each single stage, for which changes must also be made in relation to how they will affect other aspects of the technique.

When checking the position of the feet it is necessary to analyse the alignment they have with the pelvis, the distance and alignment between the heels in order to find the right stability, the influence that the position



may have in the rotation towards the curved targets, the ability to help better absorb the recoil, the alignment between the tips and the influence that the position of the feet may have in keeping the pelvis-shoulders alignment.

The second phase is the body position analysis, more precisely of the knees, pelvis and shoulders. In this phase attention must be paid to the pelvis-shoulders alignment which will be fundamental during the execution of the technical gesture, to the 'stiffness' of the knees



which could create an obstruction in the lower part of the body, to the influence that the body position can have in the absorption of the recoil, to the orientation of the torso in relation to the exit point or to the trajectory of the targets, to the balance of the whole body and to how in the Skeet it can ease the mounting movement. We then move on to the analysis of the position of the arms and hands, which are the connection point between the shooter and

the shotgun. The fundamental elements to be monitored are: the position of the elbows at the same height to allow the athlete to rotate the arms in the same level, the height of the arms in relation to the shotgun which is important both to support the weapon and to avoid obstructions to the movement, the position of the hand on the fore-end, the position of the hand on the pistol as well as the position of the finger on the trigger and the wrist-elbow alignment. As far as the hand on the fore-end and the hand on the pistol are concerned, it is important to remember that the distance between them, namely the movement of the hand on the fore-end in a more backward or more advanced position, will have an impact both on the dynamic balance of the gun and on how the shooter will start the movement towards the target.

Going 'uphill' in the construction of the technique, you are faced with the positioning of the head. During this phase it is necessary to check the positioning so that it brings substantial advantages both by keeping the neck muscle chains relaxed and by allowing the eyes to be aligned parallel to the ground and the dominant eye aligned with the line of the rib.



The head should therefore be straight on the vertical axis with a slight forward shift for a proper positioning on the stock and a line of sight position parallel to the ground, but with care not to put the neck muscles in tension. Improper eye dominance with respect to the mounting side may result in problems in obtaining a correct head position.

At this point we complete the phases concerning the shooter's posture in all aspects and we must focus on the last two stages, which are essential in the construction of the waiting position: the gun hold position and the eye hold position. These two elements have a close relationship between them, since every slightest change made to one of them indirectly influences the other, in fact if you modify one of them and not the other, the connection between the different elements in the shooter's visual range will change when the shooter is ready for the call, while if you want to keep this connection unchanged, you have to modify both of them in order to keep the same angular distance between the rib line and the line of sight. When analysing these two phases, this connection must be taken into consideration together with all the other factors such as the layout of the field, the positioning of the thrower machines, the weather and visibility conditions and, as always, the technical and morphological features of the shooter. Nevertheless, the main focus must be on keeping all the elements required for a successful technical action, such as the exit zone of the target and the barrels and/or the sight of the gun, in order to have full control and be ready for the call, regardless of the distance at which the gun is positioned in relation to the exit zone of the target.

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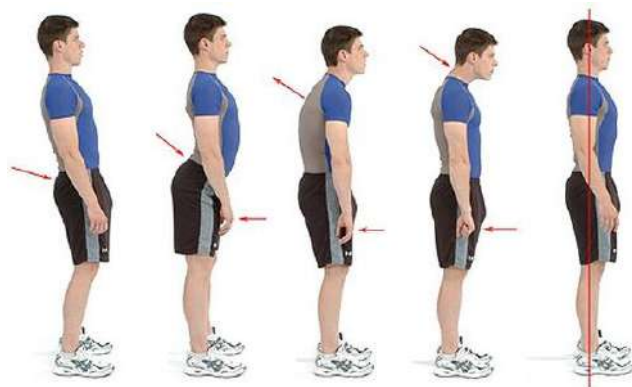
Practical tasks on the range:

1. After collecting the prior information directly from the shooter, proceed with an assessment of his skills
2. Make corrections for each station in the Skeet discipline in order to define the proper feet position related to the gun hold position

3. In the Trap discipline, create a sequence action of the gun mounting aiming to obtain a proper body alignment

2. POSITION CORRECTION, FOR EACH DISCIPLINE

The described step-by-step list of interventions includes the different phases of the construction of the shooting position, which have different features for each discipline. In any case, the reasons that can, or in some cases must, push a coach to make corrections can be immediately determined: to be able to perform the technical gesture in a smoother way,



to make less effort and consequently save both physical and mental energy and, finally, to allow the shooter to keep a consistent level of performance.

Adjustments must always be made

following the morphological features of the shooter, the coach must always be adaptable in his choices and never insist on applying the same identical corrections at any cost to shooters with different features, as the result could be ineffective. It is easy to guess, for example, that a shooter with a lower centre of gravity may opt for a narrower foot positioning than one with a higher centre of gravity, as his morphology allows him to have better stability.

In the previous chapter a bottom-up order has been defined to have a well calculated sequence, but another fundamental element is to decide how many corrections to make in a single series, in a training session or in a given period. In this respect it is necessary to take into consideration the human being's ability to process information and, above all, his capacity to absorb it. Too much information overloads the brain which cannot manage correctly all the inputs, so it is always preferred to proceed one step at a time to allow the shooter to manage all the new elements introduced. During training, whatever period you are in, for each individual series you have to work on one and only one correction.

Depending on the period you are in, however, you can decide to work on only one issue for the whole training session if competitions are not at any time soon, or, in the period before the competition (up to a maximum of 2 weeks before the competition), you can work on more than one issue in the same session, always bearing in mind to divide the corrections into different series. When you have time before competitions, if required, it may also be useful to work on a single correction for several training sessions.

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Practical tasks on the range:

1. Determine how many corrections to make to the shooter and instruct him on which aspect to start working on
2. In the Skeet discipline, make corrections to the shooter's position on platforms 2 and 6
3. Instruct the shooter about the correct use of the knees

3. CORRECTION OF THE SHOTGUN GRIP

The shooting position can also be influenced by certain elements not related to the shooter as well as corrections on his posture. Among these elements there is the shotgun stock pistol, which, when correctly set, brings considerable advantages to the athlete such as comfort, rapidity in the mounting (in the Skeet), retaining of the same execution of the mounting movement and stability of the shotgun hold during the movement with no vibrations caused by a poor grip on the pistol. The stock pistol can be of Trap or Skeet type

and have an open or closed grip, internal or external, with or without glove. To ensure a proper setting it is necessary to take into consideration the shooting technique used, the finger-wrist-to-elbow alignment, if the barrels are inclined on either side after the



mounting, the mounting movement and the hand grip on the gun's neck. The coach must examine the features the stock pistol must have in order to best adapt it to the shooter's hand and his shooting technique. These features play a fundamental role in optimising the grip of the hand on the pistol, particular attention must be given to the position of the thumb and the middle finger at the end of the grip, they must have a distance of about 1 or 2 cm with the thumb wrapping around the neck of the pistol with the muscles relaxed, otherwise, if the two fingers touch or overlap each other, it means that the pistol is too big

or too small. In some cases it is possible to modify the neck so that the thumb can wrap around the handle better. Sometimes, depending on the shooter's features, it may be necessary to move the comb far forward with the risk of leaving no room for the thumb on the neck of the pistol, which may therefore be lowered to allow a proper grip. Another important element is the support of the palm of the hand, which must be well attached so as to avoid slipping or small jolts. A closed pistol compared to an open one makes it easier to push the gun upwards during the mounting which is very useful especially in the Skeet discipline. In the Trap it is recommended not to go too far towards a gun that is too closed or too open, and to find the right compromise, depending on the technique used and on the wrist/ elbow alignment, that can allow an easier mounting with no need to activate the muscular chains of the shoulders.

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Practical task on the range:

1. Make the necessary adjustments on the shotgun grip to achieve the correct alignment of the finger on the trigger

4. PROPER GUN FITTING

The shotgun pistol plays a crucial role in the setting of the weapon, but obviously this is not the only factor to analyse. Before proceeding to list all the phases and features of the gun fitting, attention should be paid to some important definitions and how to deal with certain

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problems. Firstly we will go through the concepts of static and dynamic shotgun balancing: you have a static balance when the weapon, resting on a wedge at the height of the central pins, remains in balance; you can work by adding weight on the front or rear of the shotgun if it is not balanced, until you reach perfect balance. By dynamic balance, on the other hand, we mean the balance that the shotgun reaches, once set, between the shooter's hands; the weight distribution must be equal between the two hands until the end of the technical gesture. In order to obtain an ideal dynamic balance, the shooter can move his hand over the fore-end until he reaches the most suitable balance for him.

The gun fitting process, as mentioned, must take into account several elements, among which are the barrels. Right from the start, it is necessary to check which type of barrels are mounted on the weapon, so as to know their features and be able to act correctly on the setting of the entire shotgun. In particular, attention must be paid to:

- Weight and length
- Balance
- Type



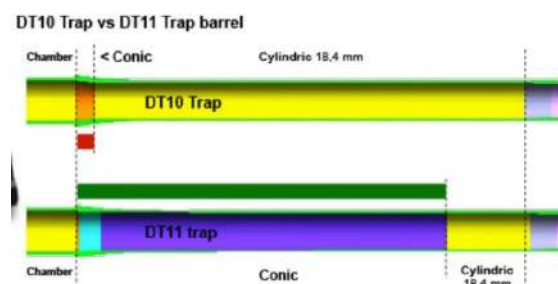
Weight and length are very influential in the gun fitting process. The length is chosen according to the physical features of the shooter and to the discipline: in the Trap are currently used 75, 76 or 81 cm long barrels, while in the Skeet discipline are used 71, 73, 74

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or 76 cm long barrels. These sizes may also vary according to the brand of shotgun used, as well as the weight, which must however be chosen according to the following criteria: shooter features, discipline, total weight of the weapon. The barrels balance also varies, in this case too, depending on the production company, which, depending on the weapon's specifications, opts for a barrels balance at a range (more or less close) with reference to the receiver. The main difference, in general terms, is that a balance closer to the receiver allows to start the technical action with less effort and is suggested for those shooters who prefer a soft and controlled start, while a more distant balance favours a greater stability of the weapon in the initial phase of the technical action, with the shooter who must push with greater effort and hold this thrust until he hits the target. Knowing the type of barrels is crucial to know how the cartridge runs through them and consequently how they can affect the shot pattern. The barrels can be:

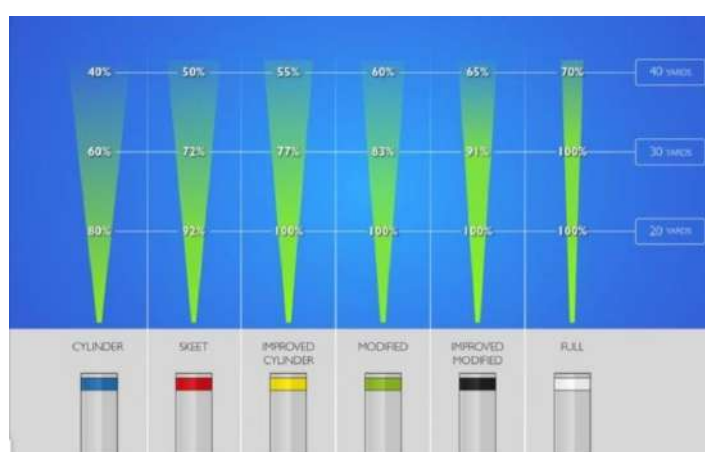
- Fixed or with chokes
- For the Trap or Skeet

It is worth considering with great care the constriction choke, which varies considerably depending on the discipline involved. In the case, for example, of a 12-gauge shotgun with 18.4 mm barrel core and narrowing up to 17.9 mm, the difference is 0.5 mm so the size is 5/10 (five tenths) or 3 stars (***) or half choke (1/2 choke).



A greater constriction choke will produce a more closed shot pattern, on the contrary the shot pattern will tend to 'open' earlier. In the Trap, therefore, it is advisable to have a greater choke in the second barrel than the one in the first barrel, because the target will be further away and it is necessary to have a shot pattern that stays compact for a longer time and with an adequate speed of impact of the pellets on the target.

The constriction choke for the Skeet is purposely built to obtain a wider shot pattern at a short distance. Usually, a constriction choke called 'skeet' or cylindrical is used on the first barrel, in order to have an ideal shot pattern at close range, although over the years, with the increase of the falling distance of the targets and therefore of their speed, in addition to the use of flash targets in the final or ecological (sometimes harder) during qualifying, we have started to use chokes to have a slightly more closed shot pattern in order to be more suitable and effective. On the second barrel, as it happens in the Trap, a more closed choke is used to have an ideal shot pattern at a greater distance. In the Skeet discipline, when choosing the chokes, it is necessary to take into consideration the speed and the hardness of the targets as well as the technique used.



Having introduced these definitions and clarified some elements related to shotgun barrels, we can outline all phases of gun fitting in the following way:

- Checking the features of the barrels
- Checking the shotgun balance
- Checking the head position
- Checking the eye-rib alignment both in waiting position and after firing
- Checking the stock gun
- Finger position on the trigger
- Incline of the finger on the trigger
- Finger-wrist-elbow alignment
- Checking the stock: deviation, pitch angle, length, recoil pad, cutting of the recoil pad, line of sight



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Practical tasks on the range:

1. Make changes to the gun for a perfect static balance
2. Define the correct pitch angle for the shooter
3. In the Trap discipline, adjust the stock of the gun in order to obtain the correct eye-rib alignment
4. In the Skeet discipline, which are the reasons for the choice of the chokes used in the first barrel and second barrel by the shooter who is simulating a competition

5. EXERCISES FOR DEVELOPING BASIC SHOOTING SKILLS

Some basic skills should be developed and improved from the very beginning; in order to do so, it is possible to practice some exercises both during the shooting series and outside of the shooting platform. The basic skills to be developed to improve the waiting position are those related to the shooting stance aimed at achieving the best balance and stability of the shooter, to the hand-eye coordination, as well as those related to the shotgun mounting in the Trap discipline. Every single skill needs practice in order to be improved, allowing the shooter to achieve gradual growth and maintaining a constant level of performance. The exercise also involves the automation of the technical gesture. As with error adjustments, it is essential to determine the best time to work on these issues: this usually depends on several elements, such as the general level of the shooter and his goals. Accordingly, it is possible to choose, to give a generic example, to work intensively during the period of preparation for the sport season, and then to continue with the management and refinement/reinforcement during the competition period.

As far as the shooting stance is concerned, here below are some fundamental exercises for the development of stability and balance of each shooter:

- Preliminary exercise to let the shooter find the best balance with the shotgun in his hands and the best feeling of balance (for beginner shooters): the athlete should be positioned on the platform and, once the shotgun is closed without carrying it on his shoulders, let him

know the correct dynamic balance by moving his hand on the fore-end until he becomes familiar with a correct and natural feeling of balance.

- Stability exercises on the discosit: the shooter should stand on the discosit in the waiting position without the shotgun, on two feet for 30 seconds with a rest of 15 seconds. The exercise should be carried out with both eyes open and closed, and then repeated first on one foot and then on the other.



- Balancing exercises on fitball: let the athlete without shotgun in a static position for 5 sec, maintaining this position. Repeat for 25 times, with a rest of 30 seconds between each repetition.

- Exercises on a proprioceptive board: the shooter should get on the board first without and then holding the shotgun, maintaining the waiting position for 5 sec. Repeat 25 times with 30 sec rest between repetitions.

Switching to eye-hand coordination, you can work in the following way:

- Exercises on a proprioception board: let the shooter climb on the board without the shotgun in a relaxed position. Exercise with tennis balls while maintaining balance on the board.

- BOSU balance exercises: repeat the same exercises done on the proprioceptive board with tennis balls.



Finally, some exercises to improve the mounting movement in the Trap discipline and closing the shotgun before the call in the Skeet discipline:

- Exercise to increase the initial phase of mounting in the Trap or closing the shotgun in the Skeet: the shooter must lift the tip of the shotgun by using only the forearm of the mounting side, until the heel of the stock is in contact with the armpit, and then rotate the tip of the barrels up to eye level with the help of the hand on the pistol, bringing the hand on the fore-end at the same time, positioning it upon the fore-end using the same angle as the hand on the pistol and using it to close the shotgun. In this way the shooter is able to make a movement which does not affect his posture and therefore his balance, also allowing him to keep all the muscle chains relaxed and the foot-pelvis-shoulder alignment.

- Exercise to increase the final gun mounting phase: the shooter, once the shotgun is closed, should relax his shoulders by slightly widening the elbow of the shoulder on the mounting side to allow both hands, with a semi-circular movement, to bring the shotgun to the shoulder. At this point the face must be placed on the stock keeping the neck muscles relaxed and then move to the waiting point.

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Practical task on the range:

1. Develop a mini training session to increase the basic shooting skills

6. WORK WITH BEGINNERS – DIDACTICAL APPROACH

Working with beginners puts the coach in the condition to build the foundation for the future shooter. In opposition to what happens with an experienced or semi-experienced shooter, with whom you start right away with the technical analysis and setting of the weapon, the approach with a beginner must start a little further away. It is necessary to explain some essential concepts that are usually taken for granted:

- Definition of roles
- Shotgun knowledge and safety
- Ballistics
- Safety on the platform
- Technical regulations and shooting field knowledge

From the very beginning, defining roles allows the coach to clarify what are the limits in the coach-athlete relationship within which to work; it is appropriate to explain what is the role of the coach and what is the role of the athlete, who and how should decide the goals and the training plan to pursue them. All this avoids misunderstandings in the relationship and ensures that both parties know how to behave, without running the risk of confusing the coach-athlete relationship with what could be, for example, a relationship between friends.

Another crucial step is the knowledge of the shotgun and the safety rules necessary to be able to use it. The future shooter must be taught how a shotgun is made up, at least its main parts, how it works and how to exercise to assemble and disassemble it in total safety, explaining in detail how to handle it and when, but above all where and how it can be closed

(even if unloaded). The safety measures, in addition to the general ones to be adopted every time you handle the shotgun, are also to be followed on the platform, explaining to the new shooter how to move between the different positions, when it is possible to load the shotgun and where to turn it once loaded and closed. Safety rules are included in the technical regulations of each discipline, which are to be shown to the shooter in order to provide him with all the rules to be observed. In particular, a new shooter needs to know:

- The general rules of the chosen discipline: shooting sequence, shooters in the platform, when a target is considered to be good, how many shots for each target, how the scores are determined, how to compete in a competition
- Knowledge of the shooting field: for each discipline it is necessary to explain to the beginner shooter the field's features, its measurement, if there are limits within which to break the target, how the thrower machines must be placed, how the target's trajectories must be like.

Lastly, before moving on to practice, there is one last element to be described to the new shooter: the ballistic features. The description of what happens when the trigger is pulled and therefore how the shot is fired, as well as an explanation of how it is created and the shot pattern influence, allows the beginner to better understand everything the coach is going to do. At the end of this preparatory phase, it is possible to proceed to the practice of setting the shooter with a correct shooting position. The following is a step-by-step sequence to define the position in both disciplines:

- Skeet position:
 - ✓ Search for the proper foot position for each platform

- ✓ Knees kept relaxed at all times
 - ✓ Checking the proper foot-pelvis-shoulder alignment when closing the shotgun
 - ✓ Execution of the rotation movement of the upper body up to the waiting point in some platforms
 - ✓ Positioning the shotgun
 - ✓ Positioning of the gaze
- Trap position:
- ✓ Search for the proper foot position to be held in each platform
 - ✓ Knees kept relaxed at all times
 - ✓ Execution of the gun mounting movement
 - ✓ Checking the correct foot-pelvis-shoulder alignment at the end of the gun mounting
 - ✓ Positioning the shotgun
 - ✓ Positioning the gaze

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Practical tasks on the range:

1. Establish the roles and rules in the relationship between you and the beginner shooter
2. Instruct the shooter about the shotgun mechanics and safety rules
3. In the Trap discipline, instruct the beginner shooter for an ease construction of the shooting position
4. In the Skeet discipline, instruct the beginner shooter for an ease construction of the shooting position

7. DEVELOPING SHOOTING SCHOOL SYSTEM

The development of a shooting school system allows the coach to become part of a well-organized scheme, which includes specific planning in all phases of the project: from talent recruitment to the ultimate mission previously defined. A good training scheme puts the athlete at the centre of the project, for which a learning program must be developed according to his age, skill level and what are the goals to be achieved. It is necessary to decide and organize the fundamental areas of intervention:

- Technical and tactical area
- Mental area
- Physical training area

For each area, a person experienced in that area should be in charge in order to develop the training schedules and coordinate both the other coaches of that same area and the athletes during the training sessions. Each area supervisor must organize the work plan following the guidelines given by the Technical Director, who has the role of director and manager for all areas, he should provide guidelines for the development of the whole technical activity, taking into account the challenges of each single area and most importantly, coordinating the areas among them to ensure they are all functional to each other. The development of a shooting school system brings considerable advantages:

- Stable and constant setting of the training parameters and the development phase of the athlete

- Search for young talents at an early age
- Optimize resources
- Discipline exchangeability
- Social orientation
- Use of a well-defined training methodology, which leads to a constant growth in performance and lower average age of athletes who will take part in international competitions.

In order to be able to best organize every single area and the whole educational program, it is necessary to take into account some specific factors for the growth of the athlete:

- Time / hours of training necessary to achieve excellence
- Fun: fundamental in children-boys before teenage years. They must learn through playing
- Development stage: set up training and competition programs based on physical, cognitive and emotional development and not in reference to the age
- Periodization: it is about time management. It is the adaptation to the development phase of the athlete taking into account growth, aging and the principles of trainability.
- Trainability: A person's ability to adapt to training loads. It is a parameter subject to change over time depending on training and performances. It can be developed if physical and motor activity in pre-adult age are appropriately stimulated.
- Training planning according to the athlete's development phase
- Improvement: every athlete can always improve his athletic performance

- Multi-skill development: to develop every single skill related to the discipline practiced in a homogeneous way. Development of each single skill in a gradual way compared to the others

The development of a shooting school system goes through three phases: organisational, relational and operational. The organisational phase involves the definition of the roles each member must play within the school (organisation chart), the choice of the areas of intervention and of all the coaches who will be in charge of carrying out the teaching activity, as well as determining the main mission to be achieved. It is necessary to set the search and selection criteria for the athletes and to develop different training schemes especially in case of particular situations, as for instance in a country with very strict safety rules where the use and handling of the weapon by a third person (coach) is not allowed or where due to particular weather conditions (too hot, snow, etc.) it is necessary to adjust the timetables and/or training periods. Finally, the school must be given an identity by creating a recognisable brand and, if possible, it should be located in a well-defined location.

The following phase is the relational phase, in which it is important to create a series of tools enabling the school to entertain and maintain relations with both users and bodies in the sector. In this context, it is necessary to create an athletes' database, so as to always have a history of the activities carried out, useful at all times to evaluate and, if necessary, modify or validate the planned work schedule for each athlete; another key element for a school is the relations with institutions, namely with Federations, Olympic Committees, Schools and all those bodies with which, in one way or another, it is necessary to deal with for the development of the project. The development of the project leads us to another crucial point, which is the search for sponsors and stakeholders (family, friends, school, etc.)

who will give a favourable (or in some cases even unfavourable) boost to the growth of the athlete both at an economic level, as concerns sponsors and/or family, and at the psychological support level, as it happens with family, friends, school, partners ecc.. Finally, it is necessary to create a series of communication channels, both digital and traditional, which make it possible to promote the school and to spread the activity carried out towards a target group interested in this specific sector.

The last phase is the operational phase, during which the actual recruitment of the athletes takes place in accordance with the criteria and parameters determined during the organisational phase, the purchase of suitable sports equipment for training and the allocation of all the athletes according to the discipline practiced and the acquired skills. At this point, finally, we proceed to the planning of the entire competition season, both training sessions and competitions, entering, from time to time, the data collected into the database for each individual athlete.

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Practical tasks on the range:

1. Prepare a plan to improve relations with institutions
2. Create areas of interest and selection criteria for the talent research at a young age

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