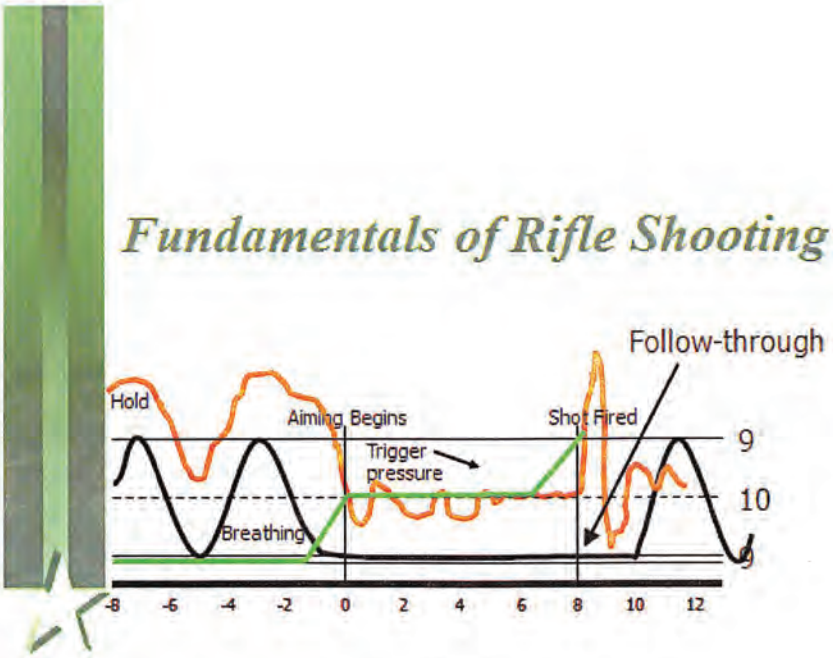
WEST POTOMAC RIFLE TEAM

FUNDAMENTALS OF RIFLE SHOOTING

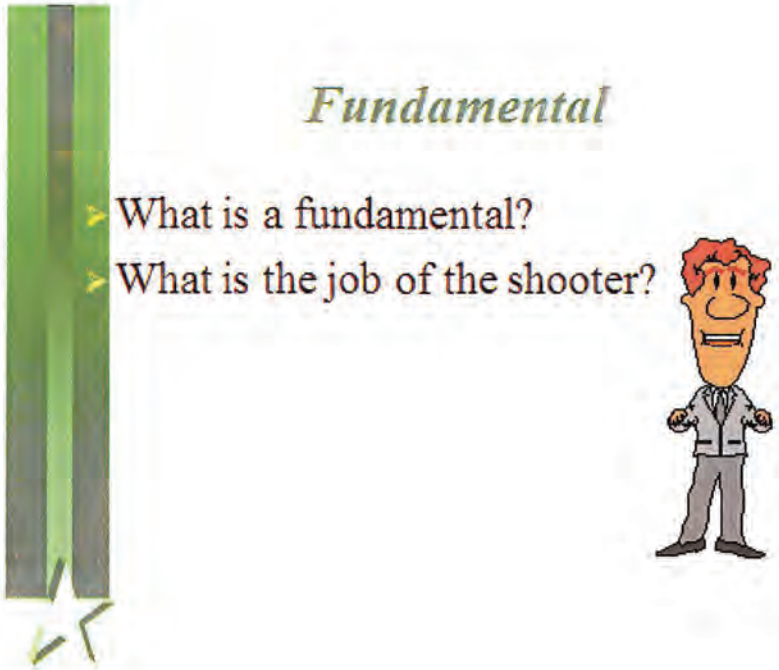


Student Notes:

Mastering the fundamentals (sight alignment/sight picture and trigger control) is the key to shooting. We will now discuss the fundamentals needed to produce one good shot. This graph illustrates this is a two person process, involving both the shooter and coach. Both coaches and shooters need to know not only how a particular fundamental works, but also why it works and why it is important. Coaches can often see things that shooters are not aware of themselves, but shooters are also aware of things that the coach can't see.

Fundamentals are not the only factors that produce a superior performance. The integrated act of firing, are other factors that assist in the shooter's process to increase their performance.

- Breath control
- Hold control
- Follow through



Student Notes:

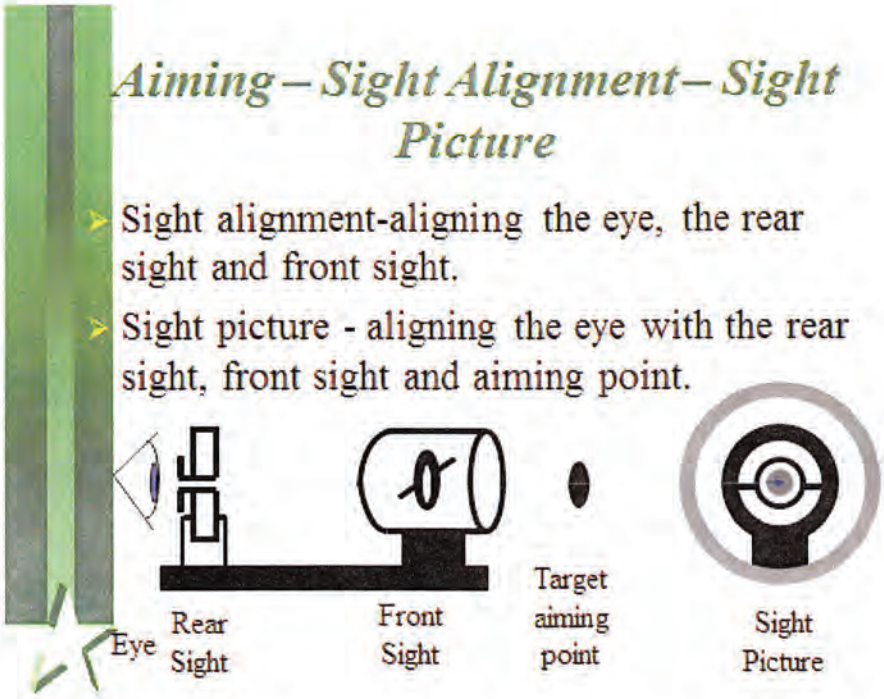
The fundamentals of rifle marksmanship embrace two factors essential to firing an accurate shot (sight alignment/sight picture, and trigger control).

Accurate rifle shooting requires only the following principle: ***Align the sights properly on that part of the target required for your group center to be in the target area and cause the firing pin to fall without disturbing the rifle.*** The two principles: trigger control; and sight alignment/sight picture effectively define the fundamentals of shooting. Additionally, the factors that represent the integrated act of firing, provides the shooter with the skills needed to perfect the basic elements of rifle shooting such as breathing, hold, and follow-through. The interrelated act of firing is the culmination of all other factors involved in shooting, to include, position, weather, nutrition, physical conditioning, and psychology of shooting, among others.

Position elements are other elements that add to the shooter's overall performance.

- Balance
- Bone Support
- Natural Point of Aim/Alignment
- Comfort (Good circulation and Unhindered Breathing)
- Consistency

The job of the shooter is to fire one perfectly executed shot!



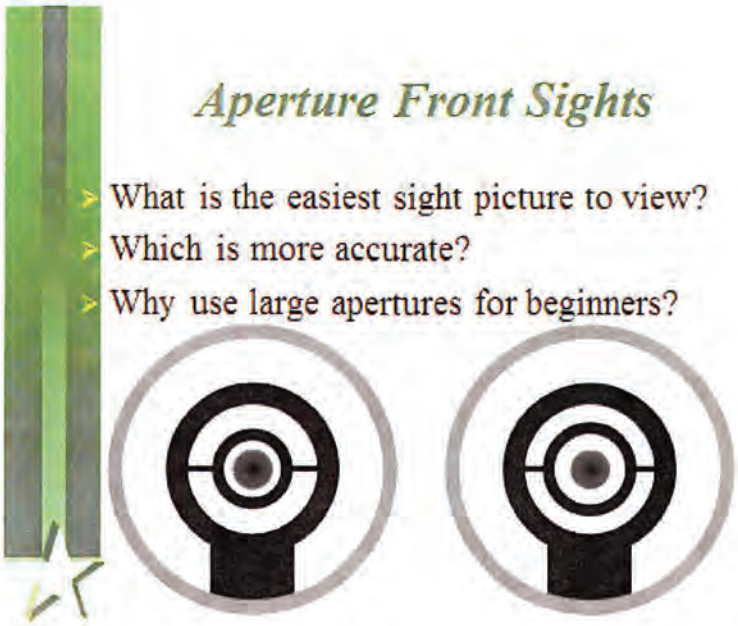
Student Notes:

Aiming is the **process** of aligning the eye, rear sight, front sight, and target.

Sight alignment is the combination of aligning the eye with the rear sight and front sight. The opening of the rear sight should appear round with the front sight centered.

Sight picture is the combination of aligning the eye with the rear sight, front sight and the aiming point on the target.

The adjustable rear sight controls both the amount of light entering the aiming eye and the depth of field.



Student Notes:

- The size of the aperture on the right depends mainly upon the athlete's hold, but also on each individual's eye and available light.
- Use apertures which allow the movement of the bull's-eye to remain inside the aperture during the best part of your hold.
- The athlete's eye will fatigue quicker using the smaller aperture than with the larger aperture.
- We recommend beginners and most intermediates use the larger apertures. The following is given as a "Rule of Thumb:"

Smallbore Prone -- 3.4 to 4.0 mm, Standing -- 3.8 to 4.2 mm, and Kneeling -- 3.7 to 4.1 mm

Air rifle Prone -- 3.8 to 4.0 mm, Standing -- 4.0 to 4.3 mm, and Kneeling -- 3.9 to 4.1 mm

Actual sizes depend upon the distance between the front sight and the rear sight. This distance is the "sight radius." Short sight radius rifles need smaller apertures, while long sight radius rifles need larger apertures to achieve the same sight picture. Smallbore targets appear smaller than air rifle targets, so use smaller apertures.

Note: Use an aperture size that contains all the shooter's hold.

Note: With more advanced rifles (smallbore), shooters are extending their sight radius using a tube attached to the end of the barrel. This tube's nickname is a "Bloop Tube." Using a "bloop tube", requires using a larger aperture due to the extended sight radius. The purpose of the "bloop tube" was for older shooters to maintain their ability to change focus from the sight to the target. Younger shooters (<40 yrs) do not require a tube for this purpose. However, some rifles shoot better with an extension tube, potentially due to the improved harmonics. Using a "bloop tube" with a shorter barrel will bring the center of gravity back towards the body and avoid a front heavy rifle .

Student Notes:

The distance between the pupil of the aiming eye and the rear sight aperture is defined as "Eye Relief."

The correct eye relief is usually 1-4 inches (2.5-10 cm). The sight must not touch the shooter's face or glasses. This can cause flinching or anticipation of the shot by bumping the shooter on recoil.

The position of the face on the stock must be consistent and on the same point for every shot. Key considerations are: consistency in the placement of the face on the stock vertically and horizontally, as well as the distance to the sight. This is where most unexplained shots come from.

Also, changing the eye relief should not be done during the course of fire unless you can take additional sighting shots. Moving the rear sight forward and back will change the center of the shot group on the target.

The Eyes

- Should we close one eye?
- What are blinders?
- How can you make a temporary blinder?
- How long should we look at the target?

Student Notes:

The eyes work best as a pair. To avoid eye fatigue and muscle strain, both eyes must remain open. Everyone calls these items blinders, but technically there are three definitions we should know from optometry: blinders, blockers, and occluders.

Blinders can be made of paper or other material which serve to stop light from entering the eyes from the left and right sides of the head, like horse blinkers.

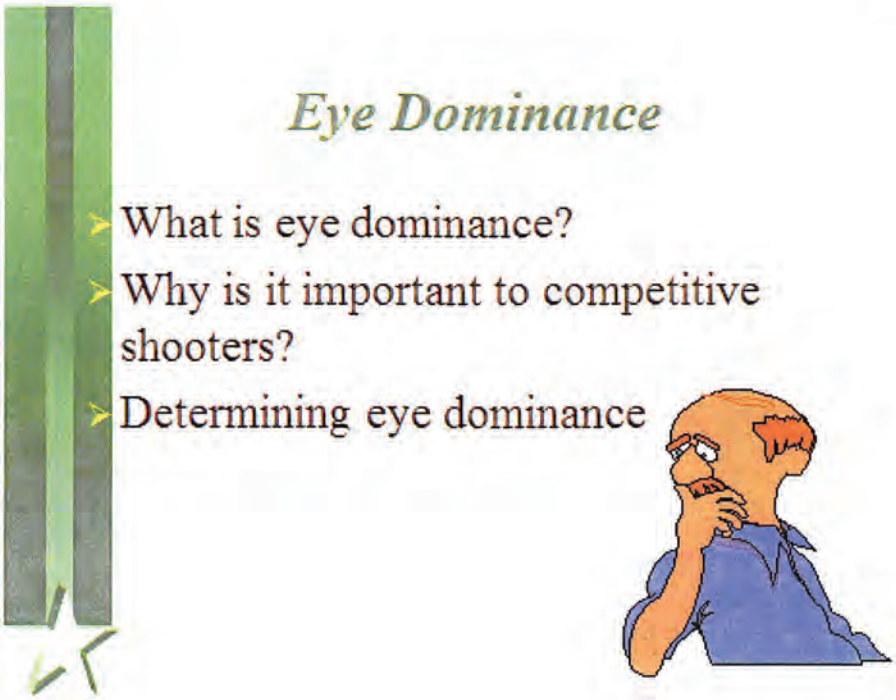
The **blocker** is material used for the purpose of blocking the non-shooting eye from viewing the target (the term blocker means to block light).

The **occluder** is a translucent material that serves the same purpose as the blocker, except it does allow light to enter the non-shooting eye allowing the eyes to work as a pair.

Occluders of neutral color or translucent material should be used. A blocker or blinder can be made from paper, a plastic milk carton, etc.

If the eye focuses on an object longer than 8-10 seconds the shooter will experience a false or "burned image" on the eye's retina. This false image is transmitted to the brain which thinks it is seeing the correct sight picture, when in reality the sight has drifted away from the center. Result? A shot that the shooter swears was good but lands in a very different place.

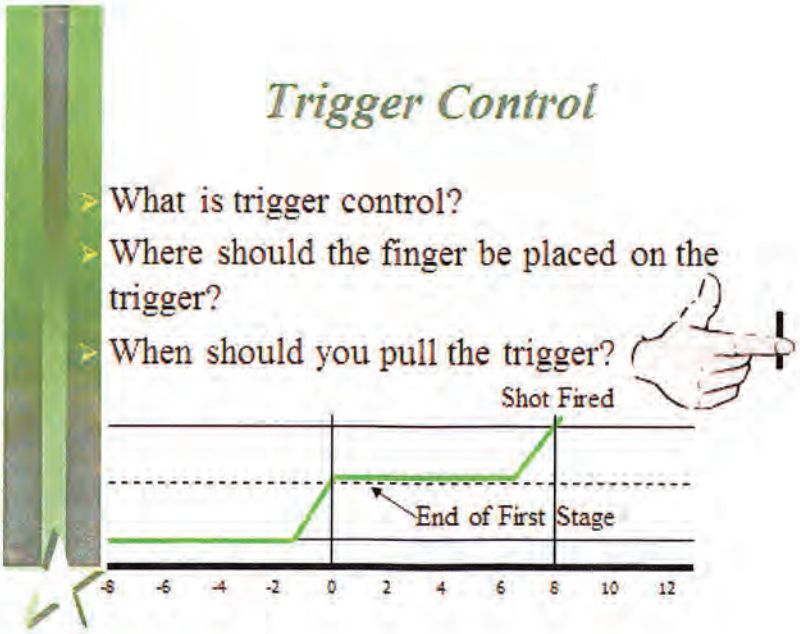
The shooter should look away from the sight picture between shots at an object farther than 15 feet away. This allows the eyes to be in a more relaxed state.



Student Notes:

Eye dominance is important for shooting in that it allows the dominant eye to focus on the sight picture while looking through the sights.

Remember the dominate eye is the one doing most of the work in our vision. As athletes, we try to do everything as naturally as possible. We try to use the dominate eye to shoot with because it is easier for the body to use its natural tools in the performance of a task - in this case shooting.



Student Notes:

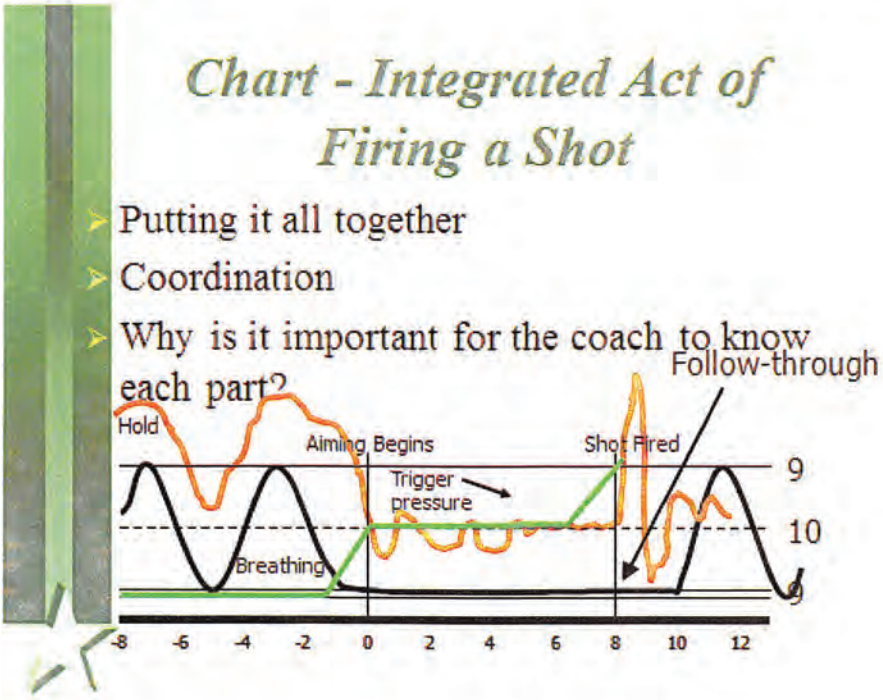
- Trigger control is smoothly moving the trigger to the rear, gradually increasing the pressure when the hold is good until the shot is fired, without disturbing the sight picture.
- Correct hand and index finger position makes trigger control easier.

1. Grasp the pistol grip firmly, as in a handshake or picking up a quart of milk.

2. The part of the index finger just above the first joint should rest on the trigger.

3. The finger must pull straight back on the trigger with independent effort. (Trigger pull is independent of any other part of the body, especially other fingers!)

- The trigger should "break" (firing pin falls) approximately 3 to 7 seconds after the slack has been taken up.

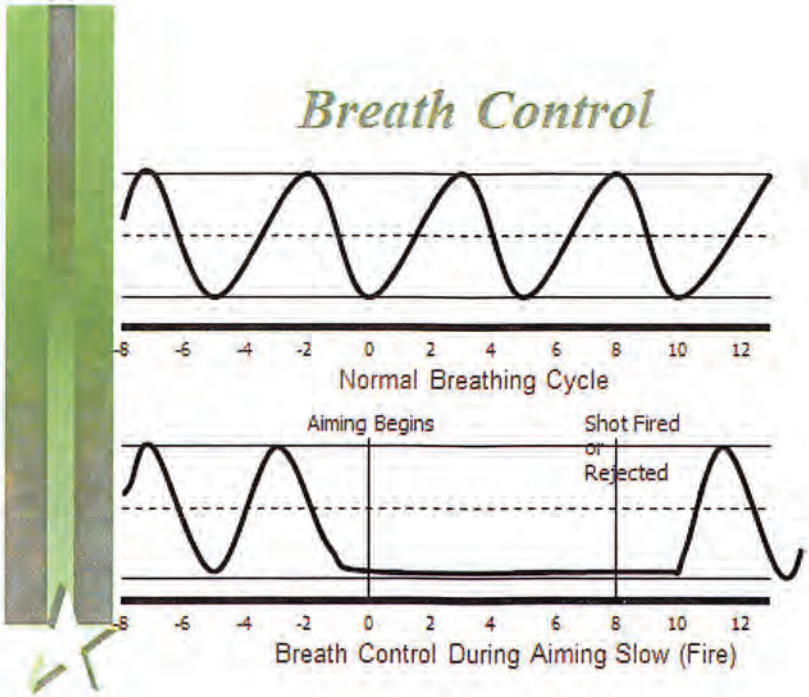


Student Notes:

Breathing, hold control, and follow-through are "parts" of the integrated act of firing a shot. These and the fundamentals must happen in a coordinated way for the shot to be successful.

This chart shows all the parts of the act of firing a shot.

Understanding each of these parts provides greater insight to proper shot execution.



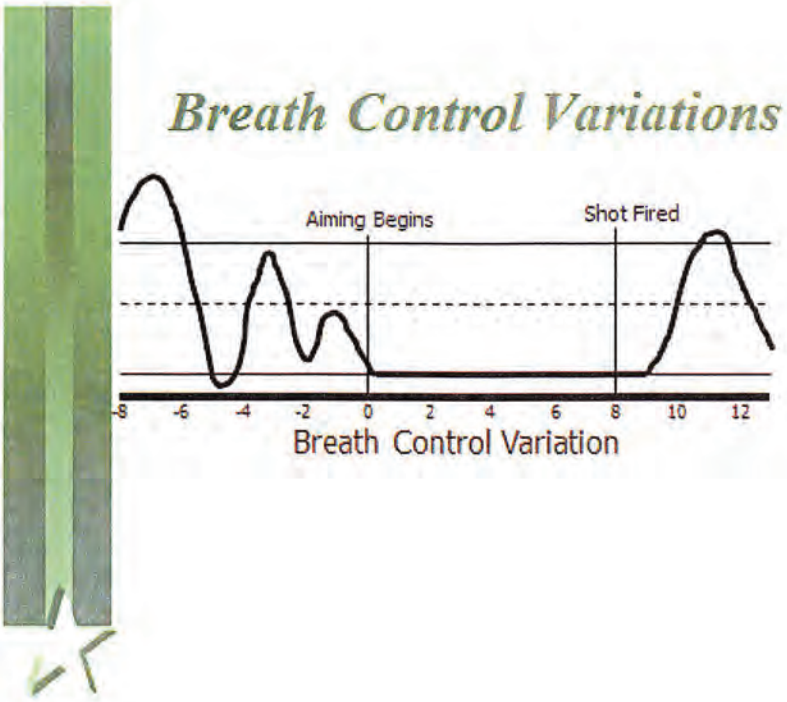
Student Notes:

We have to breathe to take in oxygen for our body to continue functioning, but when we breathe, we move and cannot stay still enough to aim precisely. Therefore, we need to stop our breathing.

- The top graph shows the normal breathing cycle that should occur until the athlete's hold settles on the bull's-eye. The lowest point on the graph is the natural respiratory pause. This is the point where the lungs are balanced with no need to exhale further or to inhale.
- The bottom graph shows the normal breathing cycle. The normal breathing cycle should be paused as the shooter's hold settles on the bull's-eye. The breath is then held for 6 to 8 seconds during which, ideally, the shot will break. Holding longer than this causes problems with vision and also the urgent feeling of the need to breathe.
- If the shot is not fired by the end of the 8 second cycle, then it should be rejected and the process is started over.

Exercise:

Look at your watch and simulate shooting a shot while controlling your breathing cycle appropriately (Breath after 10 seconds). Did you have the sense that you needed to breathe?



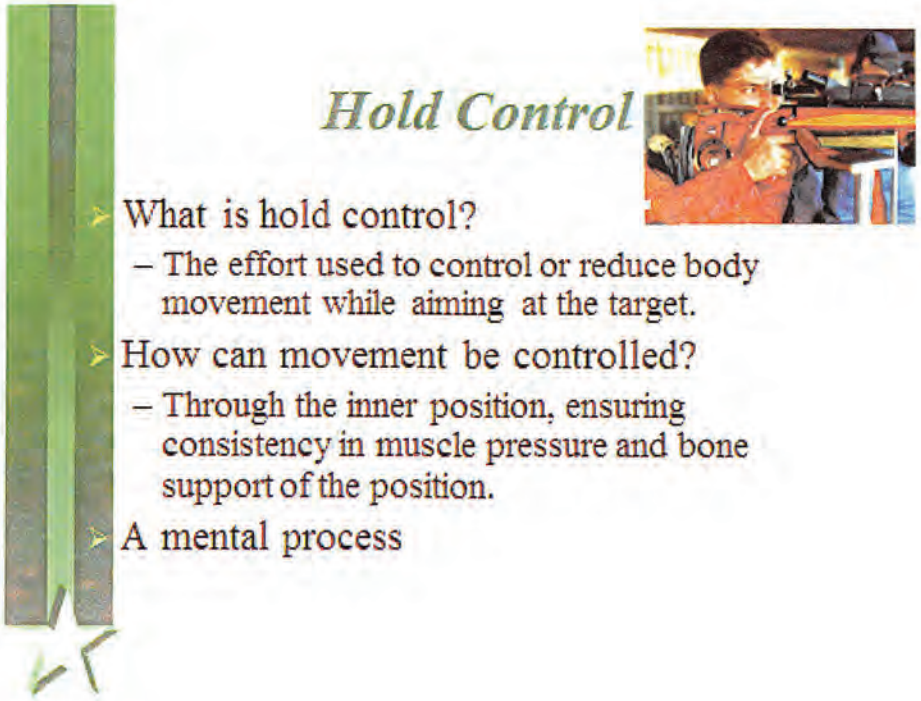
Student Notes:

It is common for shooters to take shallow breaths while settling down their hold, prior to holding their breaths.

The normal breathing cycle should be continued and then stopped for about 8 seconds when, ideally, the shot breaks.

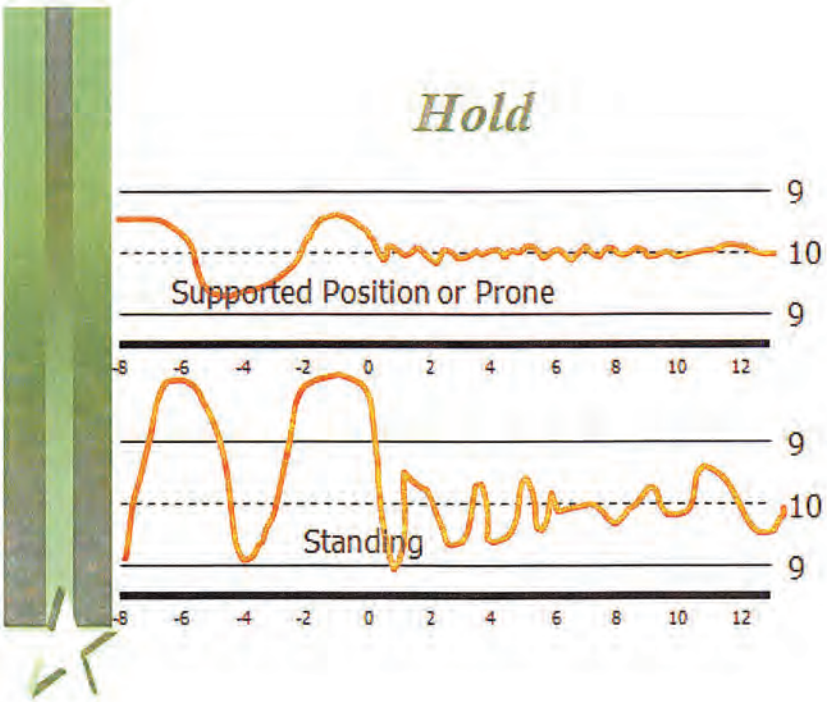
If the shot is not fired at the end of about 8 seconds, the shot should be rejected and the shooter starts the process over again.

We can control the elevation of the muzzle by slightly increasing or decreasing the amount of air in our lungs. We can use this procedure for very minor changes in elevation for "NATURAL POINT of AIM (NPA)."



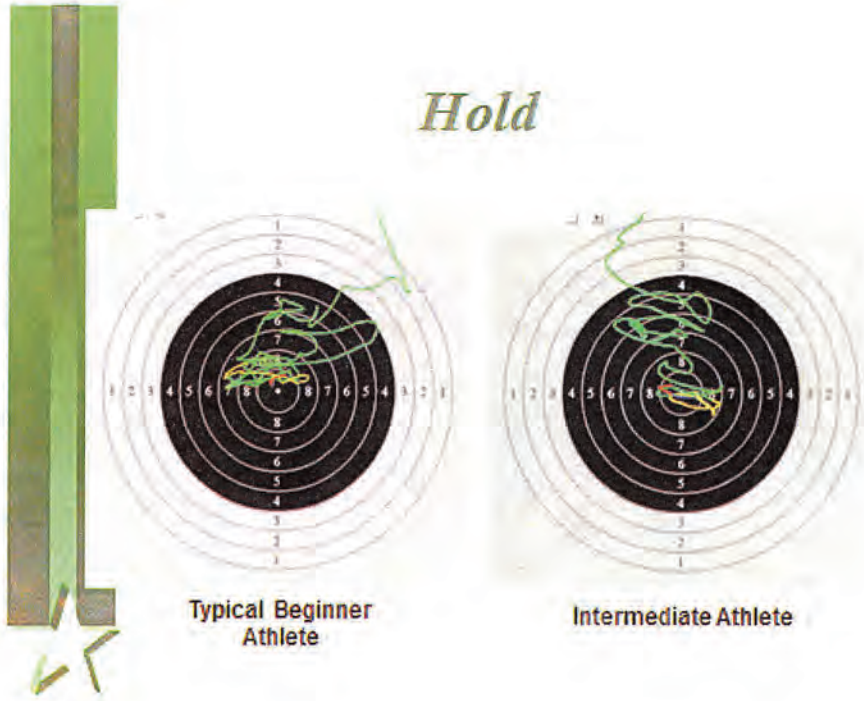
Student Notes:

- Hold control is the effort used to control or reduce body movement while aiming at the target.
- Movement can be controlled by turning one's attention inside the body "through the inner position", ensuring consistency in muscle tension and bone support of the position.
- Conscious thought about holding always results in an over correction of the error and a jerky response to that. What we are talking about is more a mental control of the hold. The thought or intention of "smallller" or "slower" will likely be more productive.



Student Notes:

- Hold varies with each position. While some people can hold a sight picture that appears motionless, there still is some movement. Learn to accept this movement and keep the trigger moving straight to the rear without disturbing the sight picture.
- Hold or hold movement is the movement shooters see in their sights.
- It takes time and training to develop a good hold.
- Test your hold control by extending your arm as if you are steadying the forearm of the rifle as you are shooting standing. Look at something over and beyond your thumb. Is your hand moving? Is it moving more after 10 seconds?



Student Notes:

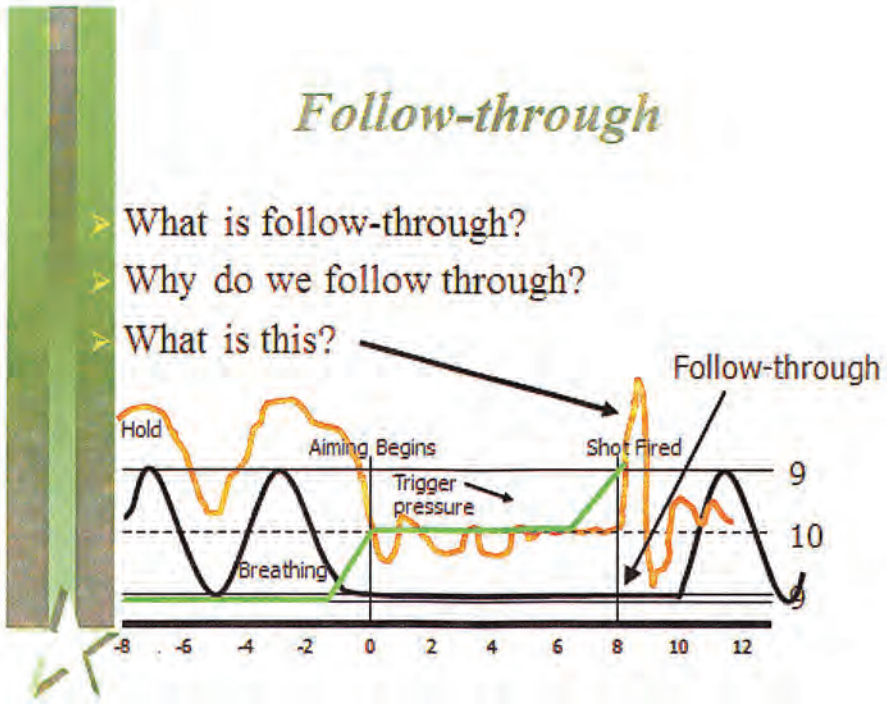
These are Scatt traces of the hold of two different air rifle shooters up to the moment of the shot. The beginner has little control of his NPA, trying to force the hold to the center as well as a larger hold area. The intermediate athlete shows better control over NPA and a smaller hold area. The hold area also indicates tensed muscles as the shooters can see that the sights are not centered and "nudge" the rifle toward the center which always over compensates out the other side. Results: Beginner = 8; Intermediate = 9.

The Scatt is a computer aided training accessory for shooters. There are other computer training systems out in the market; notably the Rika and Noptel. These systems work either dry fire or can be used live fire with pellets at 10 meters (depending on features). What is so amazing about these systems is that they allow individual shooters (and coaches) to actually see what is happening at the end of the barrel throughout the whole shot. You cannot only see the results of the shot after it has been taken but what is happening while aiming at the target.

A series of graphs enable you to analyze what happened over the series of shots, identify problems and lead you to the best course of action to take.

Student Notes:

This Scatt trace shows the hold of an elite air rifle shooter up to the moment of the shot. This athlete has excellent control of his NPA, allowing the hold to settle into the center of the target. The small hold area is indicative of relaxed muscles with no need to force the rifle toward the center (it is already there). This hold looks almost motionless to the shooter, and the result is a "10"!



Student Notes:

- Follow-through is continuing to maintain breath control, sight picture and trigger control immediately following the shot release. (Usually 1 to 2 seconds after the shot is fired for the rifle to return to its normal position after recoil).
- The shooter must first call their shot and second identify if after recoil, see if it returns to the center. If it does, it indicates good Natural Point of Aim.
- The shooter must watch for the recoil bounce. If they really are following through (keeping their eyes open!) they will be able to see the front sight jump upward and then bounce once (for air rifle) or twice (sometimes for smallbore rifle). The sights should return back to the center. If the sights don't recover to the middle of the target, then NPA was probably not aligned with the center of the target.
- Another benefit of follow through is to avoid any anticipatory movement immediately before the shot is fired. This will disturb the sight picture and change the bullet's path. This anticipation is the cause of many poor shots and shots off call.

Position Elements

- Balance
- Bone Support
- Natural Point of Aim
- Comfort
- Consistency

Student Notes:

Position elements

- Balance
- Bone Support
- Natural Point of Aim/Alignment
- Comfort (Good circulation and Unhindered Breathing)
- Consistency

Natural Point of Aim/Alignment

- Finding your NPA
- Aligning your NPA with the target
  - Horizontally
    - Moving body right or left by moving the feet
    - Moving toes inside the shoes (Fine correction)
  - Vertically
    - Moving the legs closer together or farther apart
    - Control air in lungs (Fine correction)

Student Notes:

Imagine you are standing in the center of a room which has a plain, white wall. You get into your shooting position, everything feels perfect, except you have no reference points at all to get into this position. This is your natural point of aim.

Now, imagine that someone enters the room and hangs a target. You must now align your NPA so that you are pointing at the target.

NPA must be checked every shot!

Shot Plan

- Integrating…
  - Approach
  - Breathing
  - Sight alignment and sight picture
  - Area of aim/hold
  - Trigger control
  - Follow through
- …Into a plan for delivering a good shot.
- Write it down, make it your own
- Know when to abort

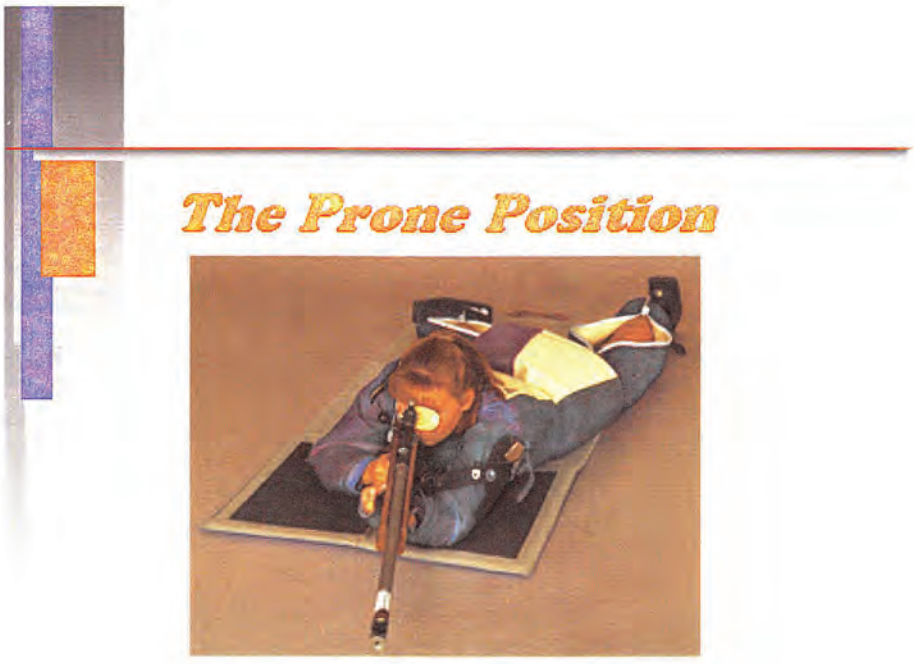
Student Notes:

A pre-shot routine or shot plan is an established set of steps that an athlete goes through before each shot is fired.

When triggering begins, the trigger pressure is applied directly in line with the bore. Once started, the pressure should be slowly applied, softly and smoothly so that the shot is a surprise.

It is detrimental to have any hesitation in the triggering action or any rapid or violent movements with the trigger finger. These inconsistencies will negatively affect the shot.

The conditions for a "perfect shot" are: the position has good stability, the shooter's hold is solid, the sight picture is good, and the triggering is directly to the rear and goes off as a surprise. The shooter holds the position for 1-2 seconds to properly call their shot and see if the recoil returns to the center of the target..

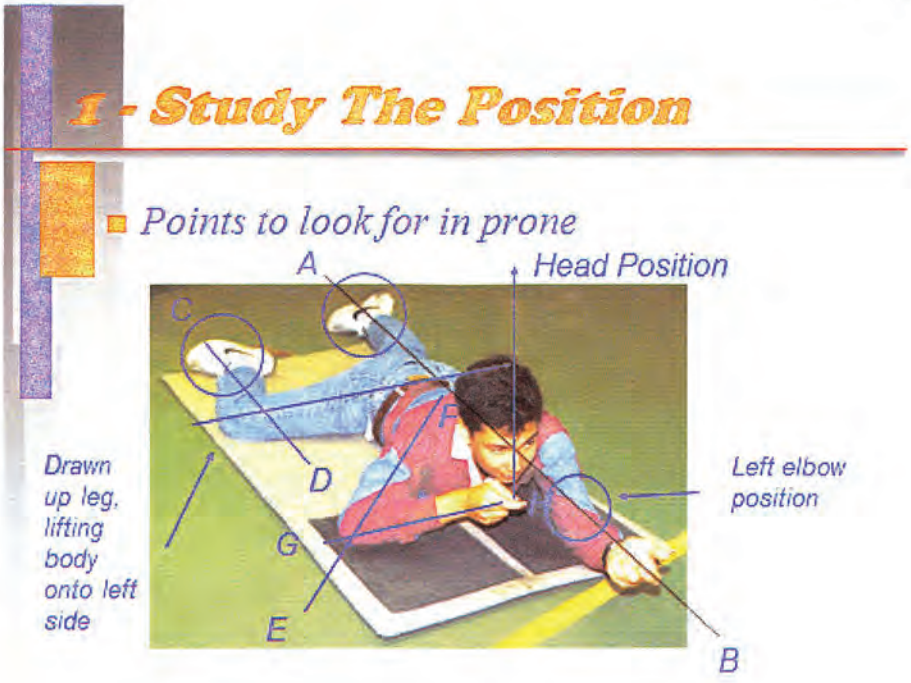


Student Notes:

We will study the prone position and then move into an exercise where we discuss and, through practical application, apply methods to teach you how to shoot the position. When you know what the correct position looks and feels like, you are able to identify and correct common shooting errors.

The shooter should understand that no position is hard to shoot. It just takes practice to find a solid position in which all aspects of the fundamentals and integrated act of shooting can come together.

The prone position is the steadiest of all the shooting positions and the hold should appear almost motionless the moment before the shot is fired.



Student Notes:

This slide shows the shooter in position without a rifle. We will go through each part separately.

Note some key points of the position:

(Right handed person, reverse for left handed shooters.)

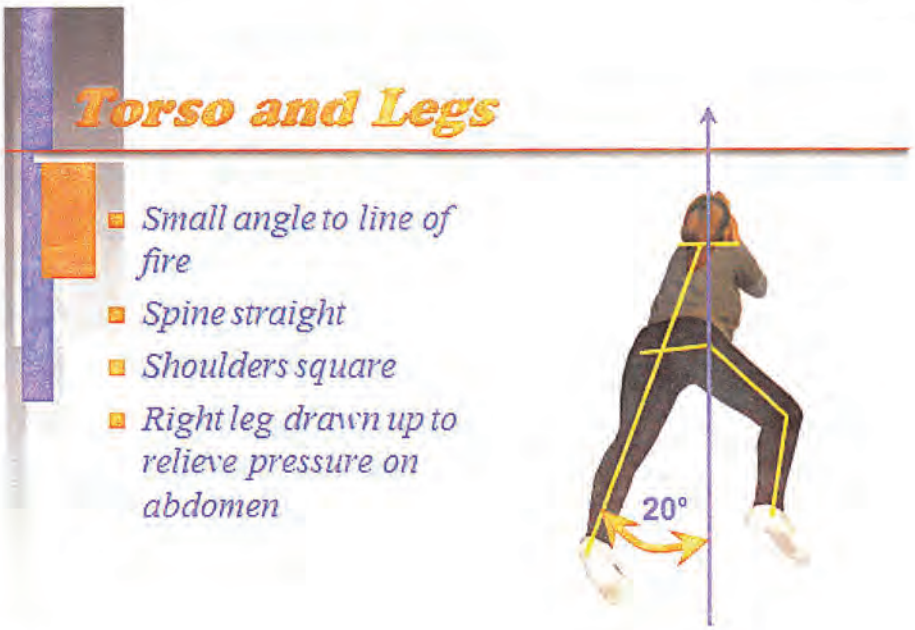
Body placement – 5-20 degrees to the left of the line to the target.

Line AB – The spine is straight with the left leg parallel to it. Body line -- the left side of the body (forearm, upper arm, left side of the body, and left leg) is essentially a straight line.

Line CD – Right leg parallel to the spine with the foot placed naturally on the mat. Right leg and foot are drawn up, shifting weight to the left side while raising the diaphragm off the floor to facilitate breathing and reduce effects of pulse transmitted to the floor from the stomach.

Line EF – Right elbow is positioned comfortably to the right side of the body.

Line GH – Wrist straight with fingers relaxed.



Student Notes:

Body position – The body lies on a solid base (ground or on a shooting table) at an angle of about 5-20° to the line of fire. The shoulders are square at the top of the spine ("T-shaped"). The body is straight and relaxed. The spine is pointing straight. (No bend or twist in the spine).

Left leg position – The left leg is easily positioned being approximately parallel to the spine, with the left.

The left arm – Acts as the main support for the rifle, assisted by the sling, which distributes the weight of the rifle to the upper arm and to the forearm. **Arm must be completely relaxed**!

The left elbow – Should reach forward, *i.e.,* the "angle of armpit" between body and upper arm should be significantly greater than 90°. When viewed from above the left upper arm and forearm should be in a straight line. The finger tips, the wrist, the elbow and shoulder should be in a vertical plane This will place the left elbow slightly to the left of the rifle.

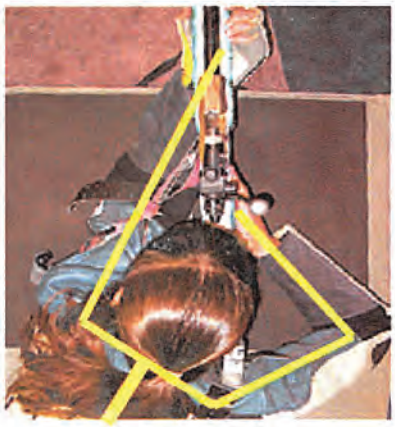
Do not place the elbow under the rifle or out to the left. This forced placement results in a very strained position since muscular tension in the upper arm and the chest are needed to maintain this position, resulting in uncontrolled shots

The position of the left elbow should be maintained throughout the match.

The forearm must form an angle of not less than 30 degrees from the horizontal, measured from the axis of the forearm for the position to be legal. 35-45 degrees is a good starting point.

Arms and Hands

- *Left arm*
- *Right arm*

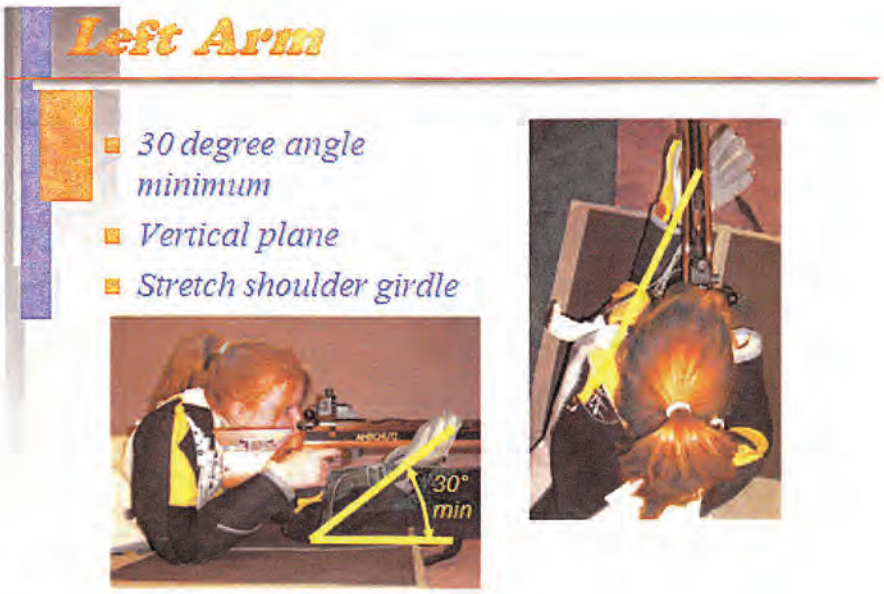


Student Notes:

Arm position – When working on positions of the arms remember:

- The left arm, assisted by the sling, supports the weight of the rifle. Once in position, the shooter does not move the elbow.
- The right arm is free to move to load, adjust sights, etc., and is integrated in trigger control.
- Both arms and the right and left elbow, respectively, are two points of the base triangle that is formed by the body, the right elbow and the left elbow.

When determining placement, their different tasks should always be remembered:



Student Notes:

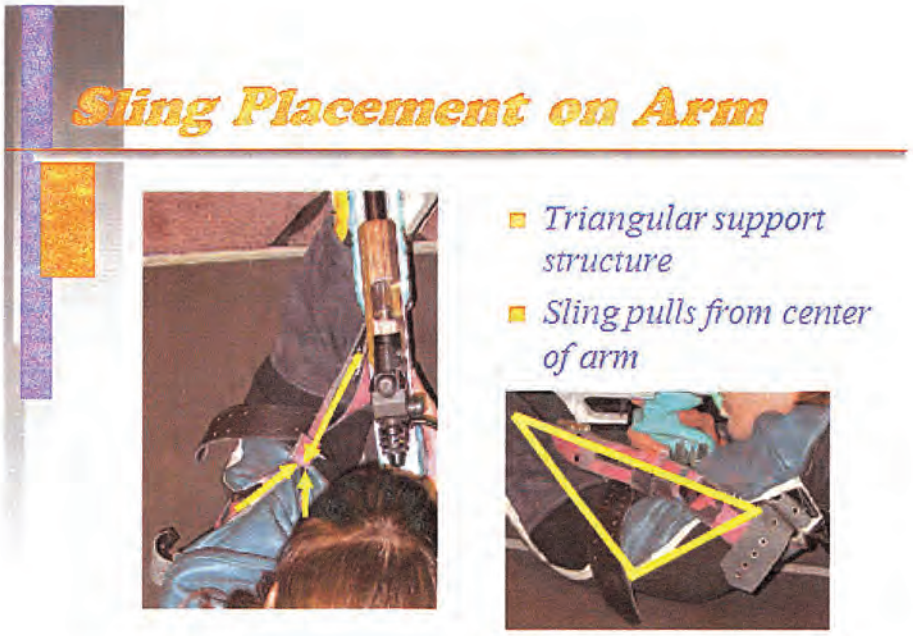
The left arm – Acts as the main support for the rifle, assisted by the sling, which distributes the weight of the rifle to the upper arm and to the forearm. **Arm must be relaxed completely**!

The left elbow – Should reach forward, *i.e.,* the "angle of armpit" between body and upper arm should be significantly greater than 90°. It is difficult to keep the weight of the rifle off of the point of the elbow. For most shooters, it is not possible to place the flat part of the elbow (the place behind the point) onto the ground without flattening the upper arm so the armpit is close to the ground. This would cause the left shoulder to drop and then the shoulders would no longer be level. When viewed from above the fingertips, wrist, elbow, and left shoulder should be straight line. This will place the left elbow slightly to the left of the rifle.

Do not place the elbow under the rifle or out to the left. This forced placement results in a very strained position since muscular tension in the upper arm and the chest are needed to maintain this position, resulting in uncontrolled shots.

The forearm must form an angle of not less than 30 degrees from the horizontal, measured from the axis of the forearm for the position to be legal. 35-45 degrees is a good starting point.

A very high rifle position is undesirable, because it results in an inconsistent hold, plus it puts undo pressure on the left elbow. It would also be problematic to have a very low rifle position, because as competition progresses the sling will probably slip causing the position to lower and may then be below the legal angle. The shooter runs the risk of being warned or even disqualified. The basic rule here is to focus the attention on a steady hold and to keep the minimum angle plus a few degrees.



Student Notes:

Placement of the sling – In prone shooting the sling is instrumental in minimizing hold movements of the rifle. The sling, combined with the bones of the arm, form a triangular-shaped structure that supports the **entire** weight of the rifle. Using the sling correctly makes it much more effective and will help your athletes shoot more consistently.

There are, of course variations of sling placement, we strongly recommend that the sling be placed above the triceps. To avoid pulsation from the brachial artery, never place directly over the bicep muscle. Placement of the sling also affects position height. If the sling is placed low, a relatively low aiming position results. Mechanically, it is better to place the sling high on the arm above the bicep and has become almost the universal placement point.

How the sling pulls also makes a difference. It should pull from the center of the arm rather than from the inside or the outside. Reason: The jacket, sweat shirt or sling will twist during the time in position and the sling will ultimately pull from the center anyway! This has the effect of lengthening the sling causing the position to get lower. And more importantly, if it pulls from the inside of the arm there is a good chance that it will pick up and transmit a pulse beat from the artery on the inside of the upper arm.

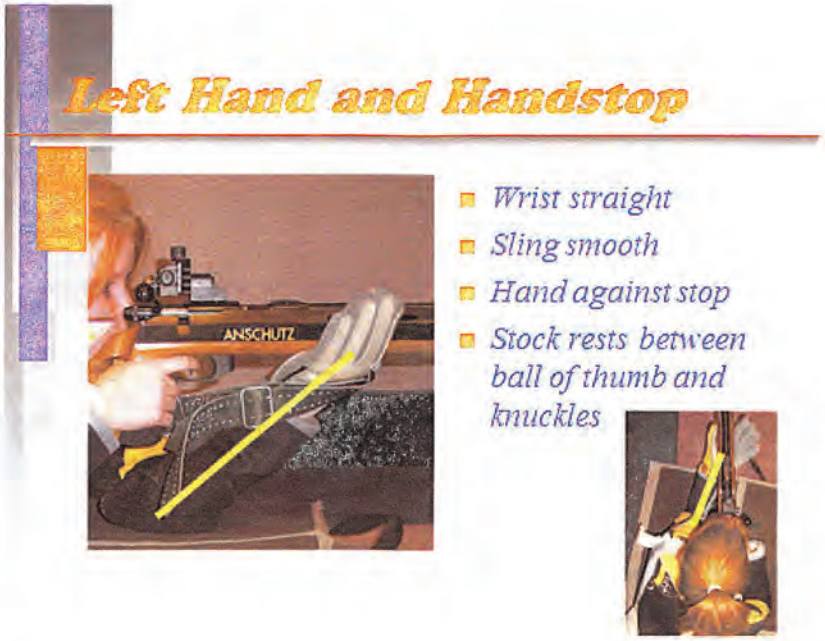
Student Notes:

Most companies make slings with sliding keepers, buckles, or other tightening device. That does not mean that you should have the athletes tighten the sling around their arm like a tourniquet! There should be a couple of fingers worth of space between the arm and the "Y" of the sling cuff.

A hook or some other device attached to the jacket can be used to prevent the sling from sliding down the arm. The hook should be adjusted so that it is at its highest position. A button can be attached to the back of the jacket and allow the sling to be placed at its highest possible location.

The sling should pass smoothly around the back of the left wrist and hand without cutting into the wrist. Putting a 1/4 turn or twist clockwise (for a right handed shooter) in the end of the sling before attaching it to the sling swivel will allow it to do this. Slip the hand between the sling and the rifle.

If the sling is being used correctly, the shooter does not need any active muscle force from the left arm. Look closely after a shot is fired to see if the muzzle drops. This indicates that the shooter is "holding the rifle up" onto the target and not using the sling fully.



Student Notes:

The left hand – The main points for the left hand are:

- The left hand is placed so that the hand stop is placed in the deepest part of the V formed by their thumb and first finger. Visual cue is that the finger tips are above the barrel and the thumb.
- The left wrist and hand are straight and the fingers are relaxed. Twisting the wrist causes unnecessary discomfort. The cause is usually a sling that is too short.
- The stock rests across the base of the hand between the ball of the thumb and the lower knuckles.
- The sling passes smoothly across the back of the left hand and glove without extra twists that will dig into the hand or wrist.

The hand-stop – The hand-stop is the connection point for the sling with the stock and provides a place against which to rest the left hand. Where the shooter ultimately places the hand stop depends on several factors including the length of the arms. The following rule of thumb may serve as a guideline: The distance between trigger and hand-stop should be about the same as the distance between trigger and butt plate. But there is no absolute rule, so the shooter will have to determine the distance that suits him or her.

The "stabilizing triangle," formed by the left arm including left hand, the sling with hand-stop in combination with the stock, ensures that the left forearm and the left hand, with the assistance of the sling, supports the entire weight of the rifle without any muscular force, thus producing a steady position. In order to maintaining this consistency throughout the match, it is necessary to prevent the sling from sliding.

Student Notes:

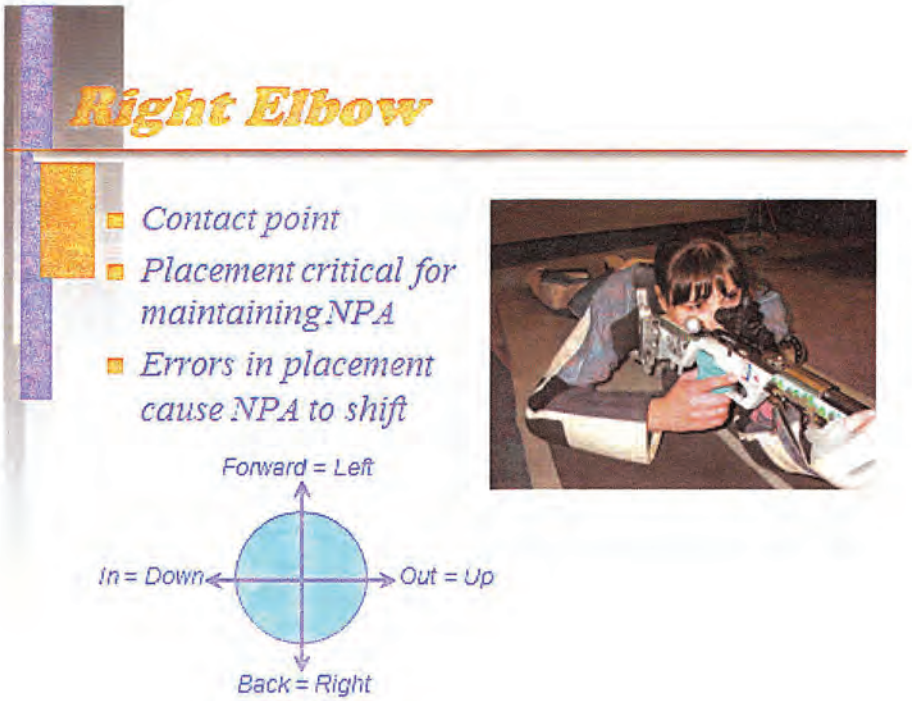
The right arm –It is positioned so that it gets the trigger finger in the correct position. The right arm and shoulder wraps around the butt plate, which is firmly in the shoulder.

The right shoulder – As the body is rolled to the left, the right side is raised slightly, with the right shoulder a little higher than the left.

The muscles of the shoulder must be relaxed. If the muscles are tense, the force applied to the butt plate changes, resulting in changes shot-to-shot. Also, if the contact of the butt plate with the shoulder is not tight, the rifle can move. With the muscles of the right shoulder being relaxed, there is also be a consistent force which may be defined as follows:

- The line of force between shoulder and rifle is sufficient to ensure consistency without influencing the shot release.
- The shoulder pressure or "length" can also be influenced by the position of the hand-stop. Moving the hand-stop forward (everything else remaining the same-increased length of pull) has the effect of pushing the shoulder back and out of the desired "T-shaped" position.

It is obvious that firm butt plate contact in the shoulder is important and must be maintained for each and every shot. The shooter should also see to it that the length of the stock is such that the desired pressure is achieved.



Student Notes:

The right elbow – The right elbow should be comfortably positioned at some distance from the body and approximately in line with the left shoulder. If the right elbow is placed too far forward, an excessive amount of tension on the muscles of the shoulder will be created. If drawn backwards and/or too close to the body, the right shoulder will be raised and the weight of the body shifted more to the left. This positioning also leads to excess muscular tension in the shoulder. Natural positioning is the key. Since the weight of the body is shifted to the left side, the right arm is free to lift off the mat to load, adjust sights etc.

Wherever the elbow is placed it must be the same from shot to shot. Inconsistent placement of the right elbow will result in changes to the natural point of aim.

Student Notes:

The right hand – The right hand **does not** act as additional support for the rifle. Its only task is to control the trigger. Therefore, the right hand should be relaxed so that any vibrations are not transmitted to the rifle and lateral pressure on the pistol grip is avoided. The pistol grip is held with consistent pressure.

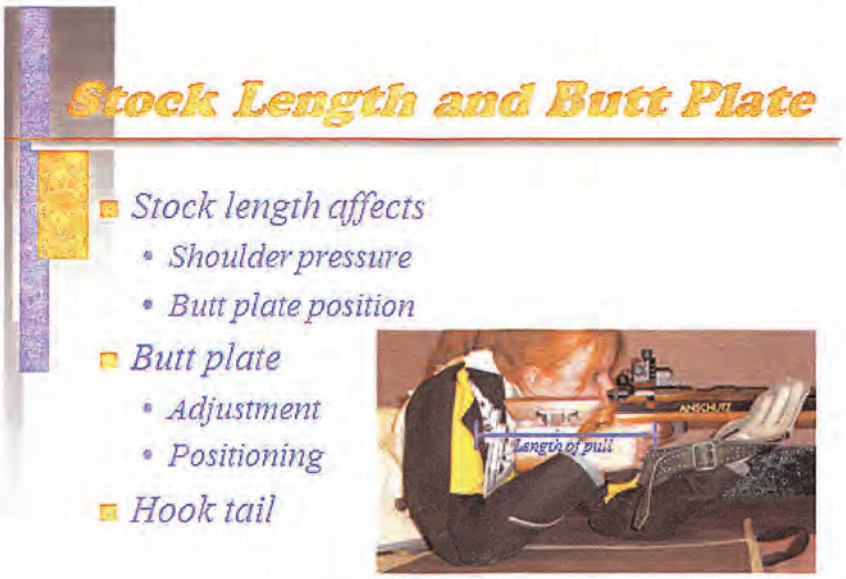
Pulling the rifle into the shoulder by increasing the force, which is applied to the pistol grip by the right hand, is undesirable because of the excess tensions of the muscles.

The hand encircles the grip. The trigger finger (forefinger) is completely free of the stock so that the trigger may be pulled without disturbing the rifle.

The trigger is pulled directly to the rear. Most precision class rifles have triggers that are adjustable. Adjust them so that the trigger finger is in the correct position after the first stage is taken up.

The force applied by the hand gripping the pistol grip must be consistent throughout the match. If not, there will be a wider range of rifle movement under recoil, with the shot group shifting.

The right hand should be a continuation of the forearm without a bend at the wrist to enable the trigger finger to function correctly. If the wrist is bent, the rifle is too short.



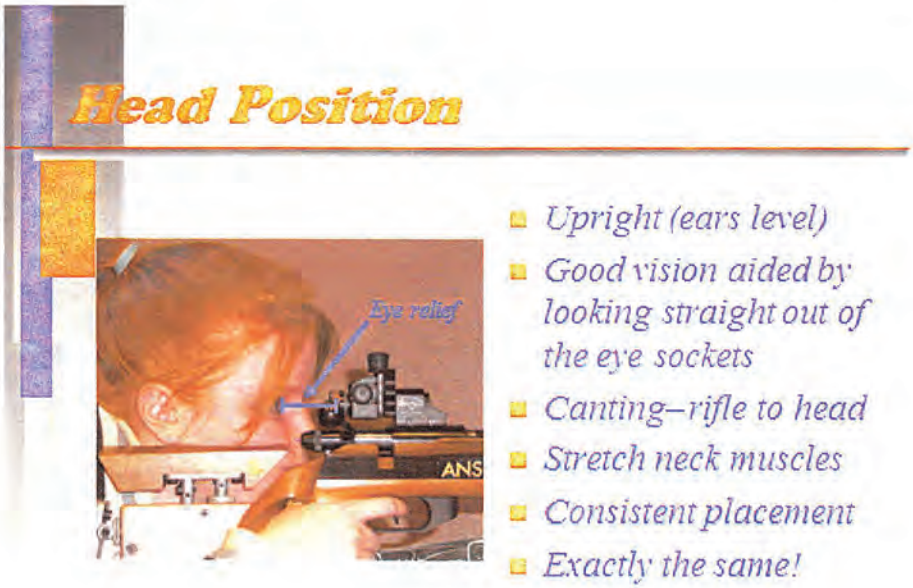
Student Notes:

The length of the stock – There is no set rule as to stock length, since it depends on the proportions of the shooter. However, if the stock is too long, the shoulder will be pushed rearwards into an unnatural position. Likewise, if the stock is too short, the shoulder must be brought forward by muscular effort in order to maintain contact with the rifle. Either way, the natural "T-shaped" position of the shoulders in relation to the spine changes, causing strain on the muscles. This may cause an inconsistent placement of the butt plate.

The pressure on both the shoulder and on the left hand must always be consistent. All other adjustments staying the same, moving the hand-stop further from the trigger guard, results in more shoulder pressure and *vice versa*.

The butt plate (or hook butt plate) – The butt plate is the contact point of the stock with the shoulder region. It must always be consistent in position and pressure. In general, the butt plate is adjusted well above the neutral position.

Regardless of the position variation (high or low), the butt plate will generally be offset horizontally (to the right as you look at it from behind), so that the stock comes as close to the neck as possible while allowing the hook to pass under the arm. The hook tail (if used) should not touch the shooters jacket on the inside upper arm. A pulse may be picked up and transmitted to the rifle. The hook tail (if used) should contact the shooter's torso, to ensure that it is consistently placed.



Student Notes:

Head position – Whichever variation is used the shooter should position the head for comfort without any effort on the neck muscles.

The head must be kept upright to allow the eyes to see through the sights. The pressure of the face on the cheek piece must be consistent for each and every shot. If the head position is altered in any direction, the shot group will shift.

The head should not be tilted toward the stock; if the shooter cannot see through the sights, the alternative is to cant the rifle. This has no real negative consequences if canting is always accomplished in the same manner. That is, bring the rifle to the head and not the head to the rifle.

The natural position for the eyes (looking straight out of the eye sockets) is aided by an upright position of the head. The distance from the eye is one of the variables in determining the placement of the rear sight, which should be in the range of 2 to 5 cm.

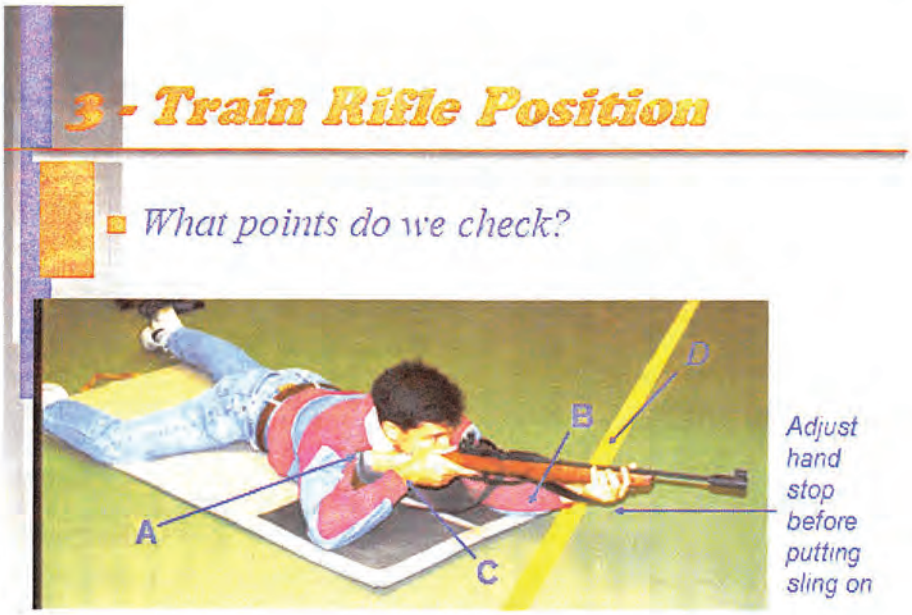
2 - Train The Body Position

- *Work from simple to complex*
- *Ask athlete to lay on the mat*
- *Ask permission to touch*
- *Make adjustments*
  - *Place leg(s)*
  - *Left arm*
  - *Right arm*
  - *Head*

Student Notes:

To assume the proper prone position, all the athlete needs to do is lay on the shooting mat facing the target. The athlete then places his body in almost the correct position naturally. This is why it is important to start without the rifle. If rifle and accessories are in the way to finding a natural position, the athlete will end up fighting himself for a position.

A quick way to determine approximate NPA positioning is to have the athlete sight at the target through the "V" formed by the left thumb and forefinger when in position. If not oriented in the right direction have them stand up and reposition themselves until they can do it.



Student Notes:

This slide shows the shooter in position with a rifle.

Look at the following lines and observe how they relate to the whole position:

Line A -- Stock in shoulder

Line B -- Elbow and forearm form an angle no less than 30 degrees above horizontal

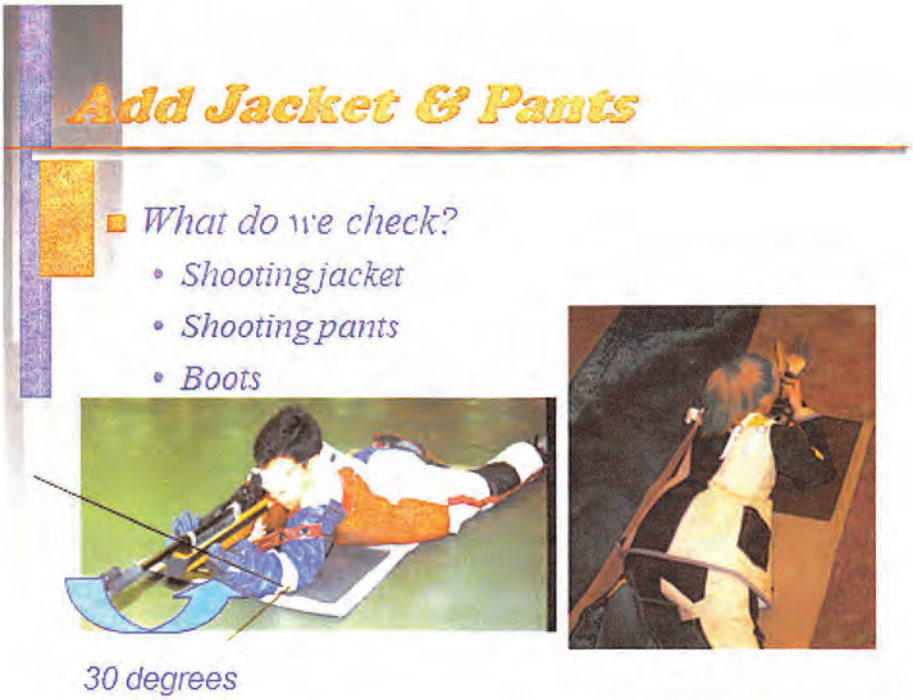
Line C -- Wrist straight

Line D -- Rifle fits naturally in the relaxed left hand (Athlete should not have a tight grip on the stock).

Add Jacket and Accessories

- *Re-adjust hand stop*
- *Re-adjust sling length*
- *Is the body position the same as without the rifle?*
  - *Check stock length*
  - *Hand stop*
  - *Sling*

Student Notes:



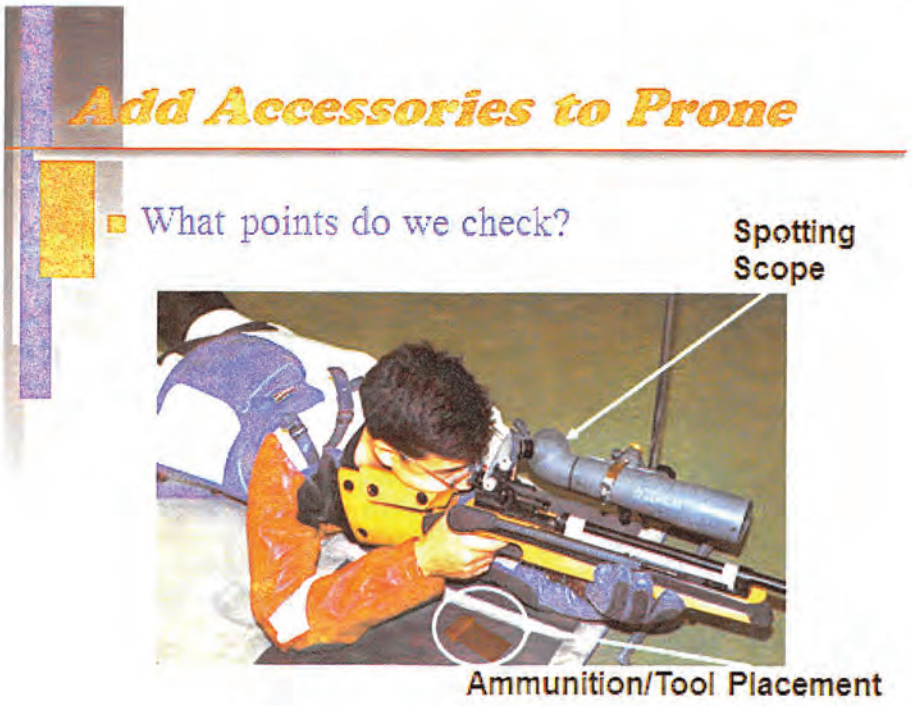
Student Notes:

Note the full extension of the left elbow.

You should note the following:

- erect head position
- 30+ degree angle of the forearm
- the rifle fully seated in the shoulder
- straight right wrist
- right leg pulled up weight shifted to the left side
- left foot in a stable position
- The stock rests on the heel and web of the hand

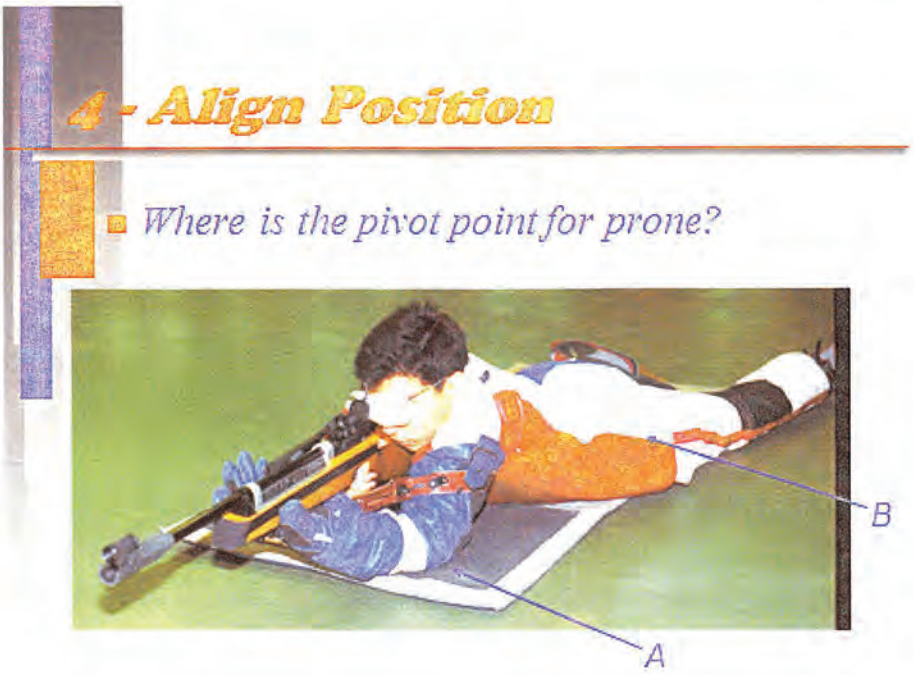
The shooting jacket is normally buttoned using only the top two or three buttons. The jacket can be kept from riding up over the shooters head by pinning it to the prone mat with the hip bone. The use of pants, which are kept open in front and loose, and/or shooting boots and is an individual decision.



Student Notes:

Spotting scope position is placed so shooter can observe the target with minimal head movement.

Shooter places loading block where it can be reached with minimum movement.



Student Notes:

Aligning the position – After having grasped the essential points of the prone technique, it is important that every shooter learns how to align the position.

To orient the position, after aiming, close the eyes, breathe, relax and reopen the eyes. If the rifle is to the right or left, above or below the aiming mark, corrections are necessary. Care must be exercised that these corrections are made without inducing changes in the correct minimum muscular tension.

The pivot point is the left elbow. We change laterally by shifting our hips left and right around the left elbow for major changes. How do we change vertical movement? We move our hips forward and/or back for major changes. Minor changes can be made by slight movement with the hips. Check NPA again.

Major alterations can be made by changing the whole position or by changing the placement of the sling, hand-stop or butt plate (hook). It may help to actually move the shooting bench (if one is used) or move the shooting mat.

NPA refinements come about by making very minor changes, for example:

- For lateral position changes, make a minor change of the legs or feet,
- For vertical position changes, adjust the sling if you have micro-adjust.

Changing the breathing pattern slightly can also make minor corrections. In the relaxed state of exhaling, the front sight must be on the aiming mark.

"Minor changes" mean corrections of hold pattern only from the 8 to 10 ring.

Student Notes:

The purpose of shooting groups is to focus on performing the fundamentals and the integrated act of firing (Aiming, Breath Control, Hold Control, Trigger Control and Follow Through).

The exercise must be performed from a solid position to aid athletes in their development.

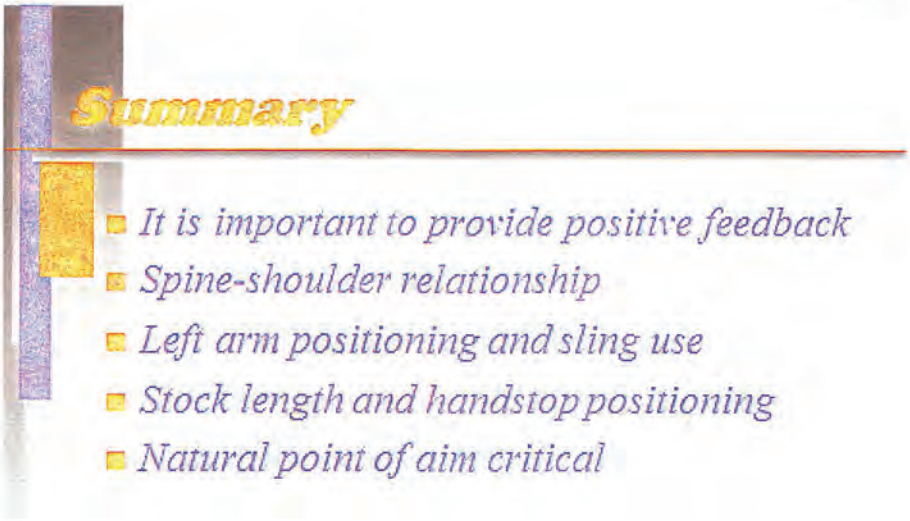
Beginning athletes may want to shoot from the supported prone position or a bench if the athlete can't get enough support from the sling (small athlete, big rifle).

- Shoot groups, 10 shots each. Do not count scoring rings, score is not important yet, MASTERING the FUNDAMENTALS IS!
- Once the groups are acceptable, move the groups to center (zeroing).
- EXERCISE: To learn how many clicks per scoring ring are necessary to move the sights, the shooter needs to be able to shoot groups. Fire a group and then move the sights 30 clicks left , shoot a group, 30 clicks up, shoot a group, 30 clicks right, shoot a group, 30 clicks down, shoot a group. This last group should be exactly over the original group. If it is not, there may be a sight problem ("dead" clicks).
- Shoot 5 shot groups, 10 groups, 8 ring or better.
- The exercise sets a good foundation to build the athlete's marksmanship skills upon.
- Always work from the simple to the complex.

Student Notes:

Recoil Characteristics – Since the prone position is the steadiest of the shooting positions, very little movement of the rifle occurs both before and when the shot is released. About the only thing the shooter can use to determine the quality of the shot is the recoil. Since everything else the shooter is doing is supposed to be the same from shot-to-shot, it also follows that recoil must also be consistent. If recoil is not the same it is the major indicator to the shooter that something is not right.

Coaches can check a prone position by the so-called "muzzle test". The coach causes the muzzle to leave its original position by gently pressing it sideways, vertically or rearwards (simulating recoil). If the position is good, the muzzle returns to its initial position. If not, the rifle will point in a different location, which means that the ideal position has not yet been found. This will include rechecking the placement of the left hand, the sling, the right shoulder region and the right hand.



Student Notes:

The prone position is the steadiest position of all, because the whole body, lying on the mat, establishes a long base of support. The center of balance is not high above the mat and, therefore, a high degree of stability can be reached. Consequently the body-rifle system will be in a relatively steady position.

The prone position in its first stages can be learned rather quickly. However, if the shooter is striving for World Class performance, he or she needs a great deal of training to produce the required results and to make sure that errors and mistakes in technique are not creeping in. In top-level performance the slightest mistake can make the difference between winning and participating.

Kneeling Position

Balance is the key...

Student Notes:

The kneeling position can be as steady as prone during the final holding phase. That is the case if it is balanced with proper relationships of different parts of the body. If not, then your shooters will be fighting the position and it will never seem to stop! Balance is the key!!

1 – Study the Position – Orientation

- Shooting "across" the position
  - Wider base area
  - Poor recoil control
- Shooting "out of" the position
  - Smaller base area
  - Good recoil control
  - Recommended

Student Notes:

The kneeling descriptions are only guidelines to help shooters find their own basic shooting position. It does not matter whether the personalized variation ultimately used achieves the classical look or whether it differs widely. In fact, kneeling is the position that varies the most. What matters is success and reproducible success.

Nevertheless, there are certain concepts and ideals that may be taken from the technical features described, offering details for the individual position.

Orientation – There are two major orientations of the kneeling position. The first is the historical position in which the shooter fires "across" the position and the more recently developed position in which the shooter fires "out of" the position.

Shooting across the position – is characterized by the angle of the hips (and shoulders) greater than about 45° from the firing line or 135° from the line of fire. The shooter has less of their body behind their rifle to absorb the recoil and poor recoil control is the result.

Shooting out of the position – is characterized by the angle of the hips (and shoulders) less than about 30° from the firing line or 120° from line of fire . Recoil control is enhanced since more of the shooter's body is in position to absorb the recoil.

The in-between area has some of the benefits and liabilities of both. Overall, we recommend shooting out of position.

Study the Position – Upright

- The spine in natural position
- About 65-70% of total weight on the right foot
- Balanced between left foot and right ankle
- Elegant solution

Student Notes:

In addition to orientation toward the target, there are a number of positions of the upper body or torso.

The position of the upper body – Body position depends on the position variation used. In order to have a better understanding of body position in kneeling, a general description of the two versions; the "Upright" or the "Forward" position. The upper part of the body will be upright, in the high variation and it will be bent forward when low variation is used.

Choice of variation –The shooter's body is the starting point in kneeling. Shooters whose upper part of the body is long or short in relation to the legs and the arms should start with the upright variation, while shooters with a long trunk and short limbs should start with the forward position variation.

Upright variant – With the upright position a greater proportion of the total weight of the body-rifle system is placed on the right foot and must be supported by the ankle/kneeling roll. This puts great pressure on the muscles of the shin and the foot, with considerable discomfort in these areas at first, followed by signs of numbness in the foot. Constant conditioning can help relieve this.

Both the right and left leg act as stabilizers. The back is kept straight, *i.e.,* the spine is un-contorted, creating a relatively relaxed position, requiring very little muscular effort. Twisting of the spine causes tension and discomfort, affecting the control of the body-rifle system.

Study the Position – Forward

- Upper body leaned forward
- Spine remains straight
- More weight on left foot
- Slightly lower gun position
- Head tipped forward
- More compact

Student Notes:

Forward variant – The upper part of the body is leaned forward and is the variation in most general use. The forward lean or slump has several effects on the body-rifle system as a whole. Some of the weight is taken off the right foot and shifted onto the left leg. Because of the forward lean, the body-rifle system is lower so more stability can be obtained. Since the weight of the body-rifle system remains supported on both the left leg and the right foot, a relatively precise balance can be obtained, with the right leg and right knee helping to stabilize the position.

The spine is held in the forward leaning configuration by ligaments, as opposed to back muscles. Muscle activity is reduced to a minimum.

To complete the forward bend of the upper part of the body and tighten the whole spine, the shoulders are rolled forward slightly to ensure better shoulder contact with the rifle. The position of the back is more of a curve that resembles an arc of a circle.

Both variations, upright and forward, are used with success, but it depends on the shooter's build as to which variation he or she should use. Your mission is to help them find the right position.

Analyze Kneeling – Kneeling Roll

- The roll
  - Conform to the instep
  - The kneeling roll must be legal
- The position of the right foot

Student Notes:

The kneeling roll – The kneeling roll is essential for shooting in the kneeling position. It helps support the weight of the body-rifle system. With most of the body weight disproportionately on the right ankle and foot, the roll must be firm and not change its shape throughout the match or training session. Thickness of the roll depends on the length of the lower leg and the size of the foot as well as other body dimensions, *e.g.*, a larger foot requires a thicker roll; a shorter lower leg may require a thinner roll.

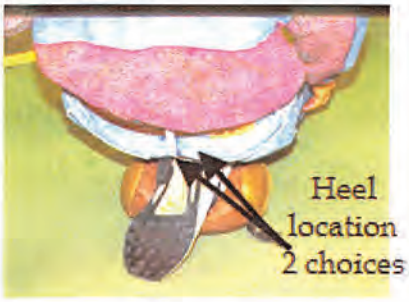
The use of the kneeling roll is not required. Some shooters sit on the heel and the instep or side of the right foot. This, of course, requires a great deal of training and a different, lower position. ***There are no top shooters who shoot without a roll.***

The position of the right foot – The instep is supported by the kneeling roll, with the heel resting against the shooter's buttocks. The tip of the toe contacts the ground firmly, helping support the weight of the body. To help relieve this pressure, precision class and smallbore shooters wear shooting boots.

In view of the importance of the right foot it is easy to see that muscles, tendons and ligaments need conditioning and must be trained. Exercise care so the blood supply to the foot is restored frequently during early training sessions, otherwise there may be pain in this area, distracting the athlete and affecting consistency.

Analyze Kneeling – Support Base

- Orienting the body
- Shape roll
- Position of the right leg



Student Notes:

Orientation of the body – The most important step in finding the perfect kneeling position is orienting the body in relation to the target. The first thing to do is place the kneeling roll on the floor. Pre-shaping the roll to provide the best fit for the ankle is a good habit to get into. Have the athlete stand behind the roll with their shoulders at about a 10-20 degree angle to the firing line. Next draw an imaginary line from the target through the roll. Then step forward placing the left heel on that imaginary line. Finally kneel down onto the roll placing the foot at the base of the spine.

Position of the right leg – The right leg stabilizes the body-rifle system, with little weight put on the right knee. There are big variations in the angle of the right leg to the line of fire. The most prevalent kneeling position has the right leg pointing about 20-45 degrees to the line of fire. Each shooter must find the ideal angle depending on flexibility and body conformation.

There should be minimal strain on the right leg. The following concept of angular adjustment should be kept in mind when developing this portion of the kneeling position:

If the angle the right leg forms to the line of fire is small, (shooting out of the position) the rifle butt will be further to the right.

If the angle is large (shooting across the position), then the center of the position will be moved left.

Analyze Kneeling – Boots

- Boots
- Sitting on the boot
- Heel at the base of the spine
- Toe of shoe or boot on the floor
  - Gives stability

Student Notes:

The shooting boots – Shooting boots (if allowed by the rules of the event) are of great help to shooters in all positions, but particularly when they are shooting from the kneeling position.

The special design of the shooting boot helps facilitate shooting from the kneeling position, particularly for the right foot. *A boot with a square toe is now illegal when shooting in USAS and ISSF competitions.*

The high boot top stabilize the ankle joints and the broad heel spreads the contact surface of the buttocks, helping make the position more comfortable.

Most shooting boots may also be opened at the rear, facilitating blood circulation and comfort.

The seat – The most common place to position the buttocks on the heel of the foot is at the base of the spine. However, some shooters experience extreme discomfort in this position, due to a sensitive tailbone. Placing the heel of the boot against the hip bone slightly off center (right side for a right handed shooter) establishes a broad and solid contact surface and is a reasonable alternative, but it may cause the position balance point to shift to the left.

Regardless of the placement, there will probably be some discomfort in the beginning, but the muscles will gradually adapt. With the aid of a seat pad between the boot and the seat, the pressure will be slightly relieved. Special conditioning exercises like sitting on the kneeling roll while watching TV or doing homework will certainly help in adapting to the pressure.

Analyze Kneeling – Left Leg

- Support for upper body and rifle

Student Notes:

The left leg – The positioning of the left leg depends mainly on the length of the thigh and the lower leg in relation to the length of the torso. In general, the lower leg is positioned nearly vertical, or just slightly forward of vertical (especially for long-legged shooters) directly under the downward force of the rifle.

Watching top shooters in the kneeling position, you will see many variations, but **never** one where the lower leg is drawn back beyond vertical – this reduces the support area and thus stability. Drawing the leg back allows the leg to move side to side more freely, exactly what we don't want.

The placement of the left leg can also compensate for unequal proportions in the shooter's build, *e.g.*, by drawing the lower leg to the body into an almost vertical position helps to equalize a long trunk and a short arm, or by increasing the angle which the lower leg forms with the thigh, a long trunk and long arms can be leveled. See the chart on the next page.

Positioning the left foot – Pointing the toes of the left foot slightly to the right at approximately the same angle as the right leg, i.e., right leg and left foot parallel, produces a slight tension on the muscles and ligaments of the lower leg and the foot improving the stability of the body-rifle system.

By turning the foot slightly, small horizontal corrections to the NPA can also be made. Care must be taken so there is no excess strain on the foot or leg and the weight is equally distributed across the bottom of the foot.

Analyze Kneeling – Left Elbow

- Elbow-knee connection
- Flat spot to flat spot
- Maintain upper body position

Student Notes:

Positioning the left elbow – The ideal is to place the flat spot on the back of the elbow on the flat spot on the knee without changing the position of the upper body, *i.e.*, the angle which the upper arm forms with the trunk remains the same. Young athletes (especially male) have growth spurts which can radically alter a great kneeling position. Be aware of this.

Depending on body conformation the left elbow may be placed either in front of, behind, or directly on the knee. While the placement of the left elbow depends on the shooter's build, remember the competition rule which says that "the point of the elbow must not be more than 10 cm over or 15 cm behind the point of the knee." If the weight is extended too far forward, instability in the body-rifle system will result.

Analyze Kneeling – Shoulders

- The key to stability
- Shoulders and hips parallel
- Rifle fit is important to maintain this correct relationship

Student Notes:

Another key to shooting well in the kneeling position is keeping the shoulders parallel with the hips.

Muscles work as agonist and antagonist pairs. In order to keep the body still they are continuously contracting-relaxing to maintain a particular orientation. If the shoulders are not parallel with the hips the spine is twisted so back muscles must be involved in maintaining this orientation. This usually results in a side-to-side movement that seems uncontrollable and never goes away.

If the shoulders are parallel with the hips the back muscles are only minimally involved in holding the shooter still.

In order to make this a reality, the rifle must be carefully adjusted to the shooter. If the stock is too long or the handstop is too far forward, the right shoulder will be pushed rearward, twisting the spine to the right as you look down from the top.

If the stock is too short or the handstop is too close to the trigger, the shooter will force the right shoulder forward to get shoulder pressure, twisting the spine to the left. A better solution is to reorient the position base more toward the target.

Analyze Kneeling – Left Arm

- Positioning left arm
- Must be relaxed

Student Notes:

Position of the left arm (when viewed from above) – The position of the left arm depends on the point of the left elbow and on the angle that the upper arm forms with the forearm. However, this is where those vertical planes come into effect again. The left arm should form a vertical plane and be sitting upon another vertical plane formed by the left lower leg and thigh. These planes do not need to be parallel (and probably won't be), but they must be vertical! The force (weight of the rifle) must be transmitted directly to the ground.

Position of the left arm (when viewed from side) – One of the tenets of kneeling shooting is that the left forearm form a straight line with the left thigh when viewed from the side. The straight line directs the force into the kneeling roll. There are varying techniques with slightly reduced or increased angles in relation to an imaginary line in continuation of the thigh. The "final" positioning of the left arm will depend on the shooter's aiming position and on the "feeling" which the shooter develops.

Analyze Kneeling – Sling and Hand

- Placing the sling
  - High on the arm
  - Pull from center of arm
  - Smooth across back of hand
- Left hand
  - Against handstop
  - Fingers relaxed

Student Notes:

Placing the sling – The sling supports the entire weight of the rifle. The length of the sling depends on the length of the left arm and also on the whole position where the sling will be attached to the stock or handstop. It depends on the angle which the forearm makes with the upper arm: The smaller the angle, the shorter the sling, the higher the position; the larger the angle, the longer the sling, the lower the position. Like prone, the sling is placed high on the left upper arm and it should be set to pull from the center of the arm. The sling passes smoothly across the back of the wrist and attaches to the rifle immediately in front of the left hand. It should be about the same length as for the prone position or just slightly shorter (one or two notches). If it is too tight (short) there will be unbalanced forces resulting in horizontal rifle movement.

Position of the left hand – In the kneeling position the left hand is positioned the same as in the prone position. The deepest part of the "V" formed by the thumb and forefinger rests against the handstop to eliminate change in hand position. A visual cue for the coach to check is if the tips of the fingers are well above the tip of the thumb. If they are not then the hand is not positioned properly. The fore-end rests across the base of the hand on the ball of the thumb, fingers are relaxed and the muscles of the hand unstrained.

There should be no bend or kink at the wrist, so no pulse beat is transmitted. The fingers do not grip the stock as this would create excessive tension in the muscles. The position of the hand stop is generally close to that of the prone position, or perhaps 1-2 cm closer to the trigger guard.

Analyze Kneeling – Right Arm

- Right shoulder
  - Relaxed
  - Solid contact point for rifle
- Right arm
  - Hangs naturally at side
- Right hand
  - Consistent grip
  - Trigger control

Student Notes:

Position of the right shoulder – The right shoulder is the contact point for the rifle just as it does in the prone and standing positions. This contact must come without any muscular strain whatsoever. To achieve this, the length of the stock must be correct. Too long of a stock pushes the right shoulder backwards and twists the spine. (Shoulders no longer parallel with the hips!) This position is also influenced by where the handstop is placed. The body position, leaning forward into the butt plate is counter balanced by the butt plate pushing back an equal amount. This results in a relaxed, but tight position.

If the contact of the buttplate with the shoulder is not consistent, the shooter may try to correct this by raising his shoulder, creating muscular tension and adversely influencing the shot release.

The position of the right arm – The right arm's task is to get the trigger finger into the correct position. The right arm hangs naturally on the right side of the body. Shoulder pressure comes from the weight of the hanging arm.

The right hand – The pistol grip is held with consistent pressure, without any lateral force. The trigger finger must be free. The right hand should be a continuation of the forearm without any bend at the wrist. Pulling the rifle into the shoulder with the muscles of the right arm will result in uncontrolled shots and group shifts caused by the relaxation of the muscles at shot release.

Analyze Kneeling – Head Position

- Vertical head helps
  - Balance
  - Most efficient use of the eye
  - Eyes looking forward out of their sockets
- Cant rifle to head if needed

Student Notes:

Head positioning – The position of the head depends on the general shooting posture. If a lower rifle position is used, the head is tipped down towards the rear sight. If a higher aiming position is used, the head will be more upright.

The head position must remain constant, not varying throughout the match or training session. To maintain a consistent placement of the head, canting of the rifle may be called for. It is better to cant the rifle to the head than cant the head to the rifle.

When the head rests on the cheek piece it must come down from above, not in from the side. This helps ensure a more consistent placement of the head.

It is also important to determine the correct distance of the sights from the eyes. The eyes should be neither too close nor too far from the rear sight aperture. As a guideline, the distance should be in the range of 3-7 cm.

Kneeling Roll – Revisited

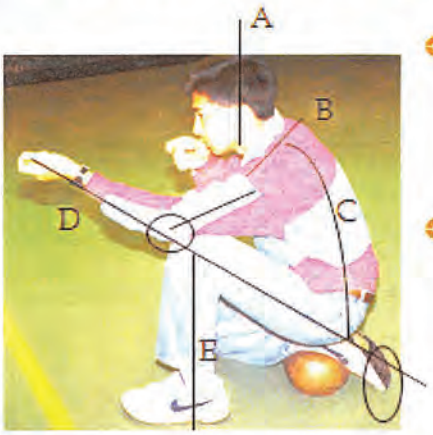
- Correctly size the roll
- Smaller diameter = less stuffing
  - Rifle points higher
- Larger diameter = more stuffing
  - Rifle points lower

Student Notes:

After we have built up correct the kneeling position, the athlete may not be pointing at the target, but rather at the floor or the ceiling. We can change where the rifle points by changing the amount of filling in the kneeling roll. By adding filling, the foot and thus the torso and shoulders are raised. With the essentially fixed height of the left knee, the rifle will pivot around that point and will now point in a different place (lower). The converse is also true; less filling, the aim is higher. Everything else being equal.

This is the reasoning behind making a personalized kneeling roll. Using just any old roll is not the consistency we are striving for.

2 – Practice the Body Position



- Using a kneeling roll, ask the athlete to kneel down without the rifle
- What points are we looking for?

Student Notes:

We ask the athlete to assume the kneeling position by putting the kneeling roll under the instep of the right leg.

Just throwing the roll on the floor and jumping down into position is certainly not going to contribute to consistency. The athlete should begin by shaping the roll to make a comfortable spot for the ankle.

Most athletes will assume a 75-80% correct kneeling position. By the time we get to kneeling the shooter will hopefully understand the benefits of the step by step process.

The athlete should get into the position and then sit straight up. The next step is placing the left elbow on the left knee. If needed, the athlete should slump straight down and lean forward slightly. The basic position is now established.

Balance Check

- Test balance without rifle to get right position
- Without rifle
  - Balance should feel biased slightly to the left
  - Slight tipping to left
- With rifle
  - Weight of rifle will counter-balance tipping
  - Test balance again
  - Micro-adjustments

Student Notes:

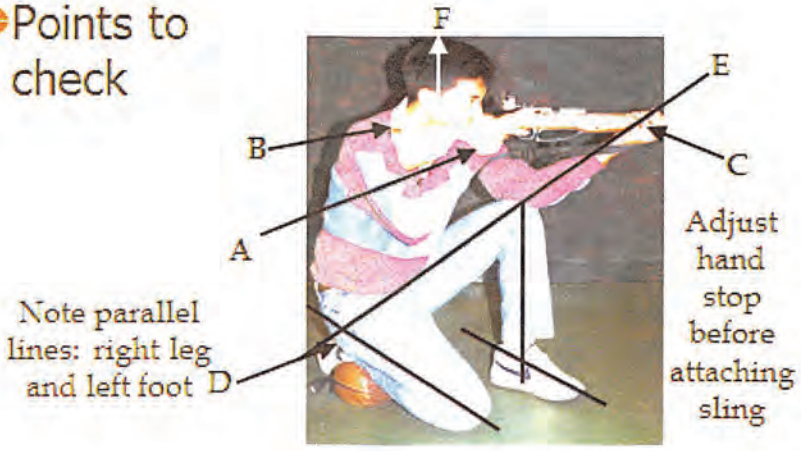
You may have noticed the tape on the floor in some of these pictures. This is a guide for the shooter to place the roll, left foot and knee, until they develop a sense of where things are supposed to go, have them set up on the guide.

Check balance – A critical skill to learn. The athlete should find a balanced position. Balance is the key to kneeling. So how does the athlete tell if they are in balance or not? It will be plainly obvious when they are not in balance, because they will be moving and fighting the position.

When the rifle is added the position will come into very close to perfect balance. Tiny changes to the left foot when in position with the rifle can fine-tune the micro-balance along the line from the roll through the left heel. If the position tips to the right, move the left foot a small amount to the right. Too much to the left, move the left foot slightly to the left. The amount of adjustment is measured in millimeters!

3 – Practice Rifle Position

- Points to check



Student Notes:

Now add the rifle to the position.

This slide shows a different view of the kneeling position and allows us to see the parallel lines formed by the right knee and toe and left foot. Note that these parallel lines are about 20-30 degrees to the right of the firing line.

The butt of the rifle fits snugly into the shoulder. Adjustable butt plates are placed near the neutral position on the rifle.

What have you noticed about the placement of the butt plate for the prone, standing, and kneeling positions.

In prone position, the butt plate is normally high on the butt of the rifle, low for standing, and in the central position for kneeling.

How does the rifle fit into the left hand?

It fits as it did in the prone position, relaxed, not controlling the rifle with a tight grip.

Notice the same procedure applies in attaching the sling. We first measure the hand stop, make a note, and then attach the sling using the same procedure in prone.

We make adjustments as we did in the prone position.

Add Coat & Pants to Position

- What do we check?
  - Coat fit
  - Pants adjustment
  - Boots tied

Student Notes:

Now we add the shooting coat and pants to the position.

How do we set up the shooting coat and pants?

We button the top one or two buttons of the coat. The looseness is needed to keep the position natural. We unzip the shooting pants so there is room for the body to lean forward slightly and let the body relax. If the jacket and pants are buttoned the athlete couldn't even get into position! Hold pants in place while assuming the position.

The boots provide a platform upon which to sit.

The sling is high on the left arm.

Sling will be slightly shorter than in the prone position.

Mark the sling and have the athlete write this setting in the shooting diary.

Open the sling keeper slightly to allow normal blood flow.

Check balance once again when the sling is in place. If necessary, make micro-adjustments for balance.

Add Support Equipment

- What do we check?
- Efficiency
- Easy access to ammo and tools
- Develop good habits early

Student Notes:

The next step is to add the shooting accessories to the position.

- Tools
- Ammo
- Spotting scope

Take note on where the spotting scope is located in the kneeling position. As in prone the shooter makes minimal movement to the scope to view his shots.

Take note on where this athlete has placed her ammunition. Ammunition is placed on the shooting stand for easy access. Remember the tools to make rifle adjustments.

4 – Align the Position

- Where is the pivot point?
- How do we make horizontal changes?
- How do we make vertical changes?

Student Notes:

The pivot point is the kneeling roll for major changes left and right. If the athlete has done a good job of setting up the position it should point naturally at the target. If not it is best to have them stand up and reposition the kneeling roll and start over from scratch.

The left foot/toe makes minor changes for lateral alignment.

For vertical alignment, we remember that we have already determined the correct kneeling roll size, so we shouldn't take filling out or add more at a match. We make major changes with the sling (butt plate if the position is not natural) and minor changes with breath control.

When you change the placement of the butt-plate, a "cause and effect" relationship in the position is created. For example, when you change the butt-plate you change the placement of your cheek on the stock. Changing your cheek on the stock causes a change in your eye relief and sight picture resulting in a new impact location for the shot group. A good piece of advice is never change the butt plate after the first record shot.

5 – Shoot the Position

- Group shooting
- Performance & fundamentals
- Move groups to target center

Student Notes:

The purpose of shooting groups is to focus on performing the fundamentals (Sighting and Trigger Control) and the integrated act of firing (Breath Control, Hold Control, and Follow-Through).

The exercise must be performed from a solid position to aid athlete's development.

Shoot 10 shot groups. Do not use scoring rings, score is not important yet, MASTERING FUNDAMENTALS IS!

Once the groups are acceptable, move the groups to center (zeroing), now use scoring rings.

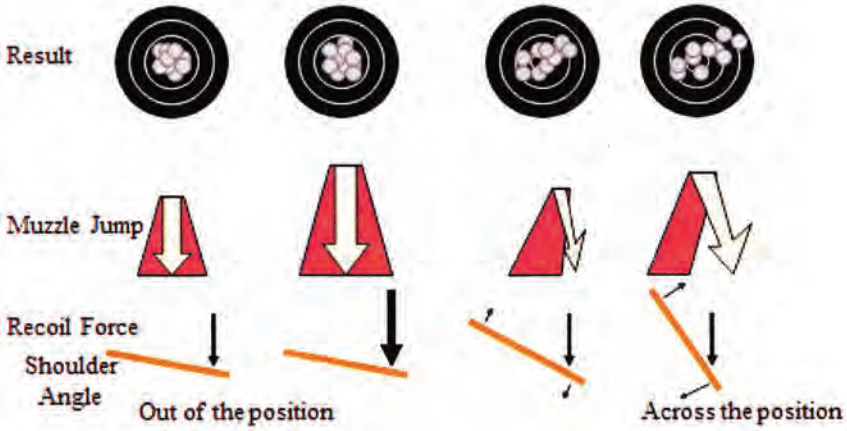
Shoot groups, 10 groups, 8 ring or better.

The exercise sets a good foundation to build the shooter's marksmanship skills upon.

Always work from the simple to the complex.

IF ALL ELSE FAILS, RETURN TO THE FUNDAMENTALS!

Recoil Characteristics – Kneeling



Student Notes:

The upper body is the mass that absorbs the recoil of the rifle. The more the better, but how you position it is important too. The best possible posture and the ideal recoil (muzzle jump) are shown in the first graphic on the left. Shoulders almost face the target.

If the rifle has greater recoil, like the difference between and air rifle and a smallbore rifle you can see in the second graphic that the muzzle jump is more, but as long as the recoil is absorbed by the body the shots are still centered.

When the shoulders are turned away from the target more and more, there is less and less mass for the recoil to push against and so the upper body is twisted to the right and the muzzle jump also increases. The arrows show what is happening.

The results on target will typically show shots out of the group at one and two o'clock. The reason there are shots in the middle is that the shooter has adjusted the sights to compensate for the recoil, but any change in the amount of tension in the body will show up in shots away from the group.

The Standing Position

Student Notes:

This lesson introduces the standing position. We will study the position and move onto an exercise where we discuss and, through practical application, apply the five elements of developing good shooting positions. When you know what the correct position looks like and feels like, you are better able to identify and correct common shooting errors.

The standing position has a larger hold area than other shooting positions. While it may never appear completely motionless, the hold should appear slow and smooth at the moment the shot is fired.

Eight Shooters–Eight Standing Positions

Women's Sport Rifle Finals, Sydney 2000 World Cup. Note variations in foot and body positions

Student Notes:

As with many aspects of position there are two extremes on either end with a continuum of variations in between. Standing is no different with two main schools of thought on the current evolution of the standing position and lots of variation based on an individual's body type and composition.

The "**Upright Position**" has evolved over the past few decades. In the "Upright Position," the back is not bent as much and the rifle settles more on the right chest (right hand shooters). The rifle should be placed in the gap between the bicep and anterior deltoid muscles (high upper arm).

What we intend to show you is a **starting point** for beginning shooters. As the athlete improves they will necessarily develop their own personalized style that fits their body conformation and fitness. Their development will depend on you giving them options to try.

Keep an open mind about all these positions and remember that while there may be a "school" solution, real world experience shows that compromises between body build and rifle design (adjustment) are an important part of developing any shooting position.

1 - Study the Position

Student Notes:

Now using our sequence of learning a position, let's study the standing position.

Use the best model(s) possible for your athletes to learn from.

Examining the standing position, it is best to think of it as a two-part position. The top half of it is the body and the arms, and the bottom half the hips, legs and feet.

The function of the bottom half (the foundation) is to physically control the movements of the position. In this sense, the legs play a dynamic role in stabilizing the balance by using changing degrees of muscle tension, while the top half of the position plays a largely passive role.

Lower Body – Feet

- Feet position
  - A little wider than shoulder width apart
  - Right angle to target
  - Toes point straight ahead
  - Weight equally distributed toe-to-heel and side-to-side

Student Notes:

Position of the Feet – The feet are the starting point for standing. The way they are placed not only determines what the position looks like, but the feet are also actively used to control hold movements. How the feet are positioned in relation to the line of fire also determines how much twist there is in the back. If the feet are turned to face the target more, the amount of back twist will be decreased. If they are turned away from the target, the back twist will increase.

The ideal amount of back twist comes when a line drawn through the balls of the feet coincides with the line of fire.

The placement of the feet also depends somewhat on the shooter's build, whether he or she is thin or heavy and their flexibility. A short/heavy/less flexible shooter may do better spreading his feet somewhat wider apart and perhaps facing towards the target just a tiny bit, while a tall/thin/more flexible shooter usually has more success increasing his back twist by pulling the right foot back and keeping his feet somewhat closer together.

Feet that are either too close together or too far apart lessen the ability to control hold movements. Widespread feet or feet placed in a narrow stance, do not necessarily provide for better postural stability. Ideally, the feet should be slightly wider than shoulder width apart.

Pointing the toes so that the feet are pointing slightly out seems to be a good starting point. If the toes are pointed out too much, the feet lose some of their leverage as they try to control the forward and backward sway of the body. The placement of the feet should cause any muscle tension. Excess tension in the rear leg, can be eased by pointing that toe outwards.

Lower Body – Legs

- Legs
  - Knees are straight, but not locked
  - Weight shifted slightly onto forward leg
  - Left leg is almost vertical, but
  - Never forward of the ankle

Student Notes:

The Task of the Legs – The leg muscles control the sway of the body and actually play a dynamic role in restricting and counteracting hold movements.

Optimum use of the leg muscles can be acquired only if both legs are used, which means keeping both knees straight. Only when the knees are held straight, but not locked, (with some slight muscle tension) is it possible to have maximum control.

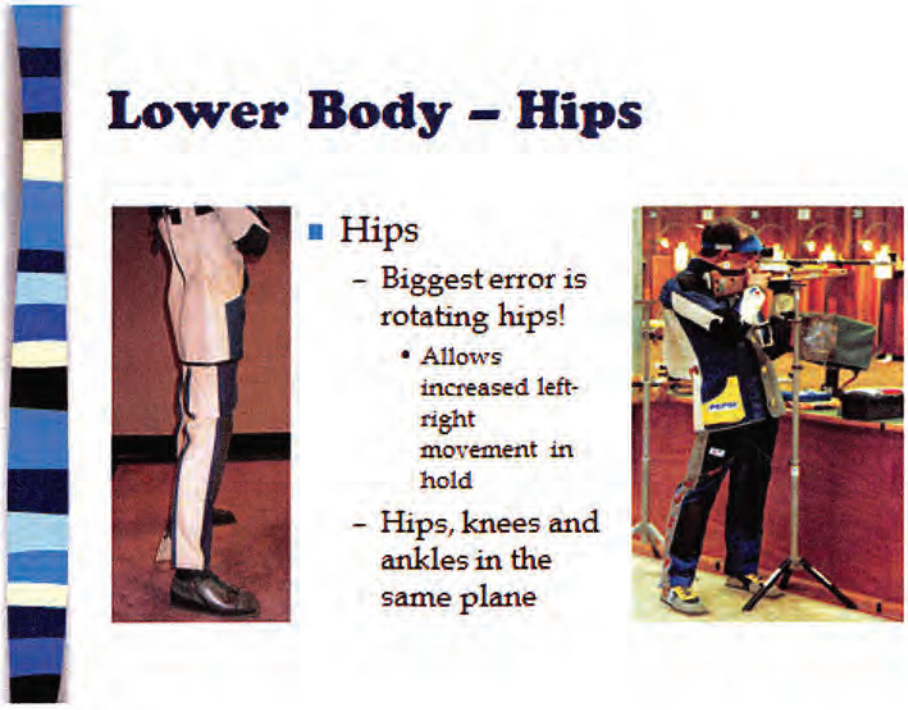
The total weight of the body-rifle system should be biased slightly (about 65:35) onto the forward foot (the left foot for a right handed shooter) with the weight equally distributed between the heel and the balls of the feet, as well as side to side on each foot. Shifting the weight causes the left leg to be placed in an almost vertical orientation to support the weight of the rifle.

Few top shooters still use the one-legged position where most (~90%) of the weight is supported on the left leg, which is kept straight, while the right leg is bent slightly at the knee, this allows the right leg to help stabilize the position.

While working on leg position the following is worth remembering:

- There must be enough tension in the leg muscles to give full control over body movements;
- The degree of muscle tension must be such that the standing match can be carried on to the end without tiring;
- Balance must remain as consistent as possible.

The idea of using a completely relaxed leg position has changed, because it is apparent that by using this variation precise balance cannot be maintained, especially since the exact balance will change every time the rifle is picked up and even while the rifle is being held.



Student Notes:

Look for this visual cue: Stand directly behind the shooter's ankles (along a line toward the target) you should not see the front leg. This indicates their hips, knees and ankles are in the same (vertical) plane. If you do see a part of the front leg, that is a good indication that the shooter is rotating their hips.

Position of the Hip

By shifting the weight onto the front foot (toward the target) and bending the back to the rear (away from the target), the hip is pushed forward toward the target, forming the contact base on which the left elbow will rest.

This completes the lower portion of the position. This stable foundation is what we will build the top part upon.

Upper Body – Back

- Back
  - Back bend and slight twist above the waist
- Shoulders level

Student Notes:

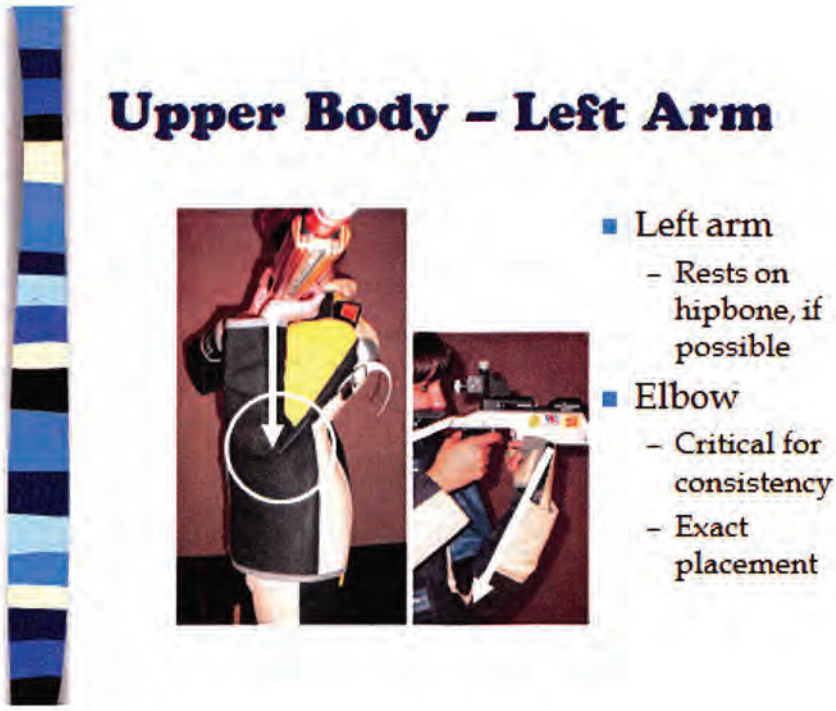
Position of the Body

The upper part of the body does not remain in a natural conformation, but instead, the back is leaned to the rear much like the body bends when carrying a large box. The weight of the body/rifle system is balanced over the support area.

The shoulders are turned slightly toward the target but remain level.

The resulting amount of body twist depends on the shooter's build, *e.g.,* a shooter with narrow hips will bend back more markedly than a squarely built shooter. The bend and slight twist of the body is done without moving the hips. This takes practice.

There may initially be some discomfort in the small of the back which can be overcome through stretching, exercise, and standing training.



Student Notes:

Position of the Left Arm – The left arm supports the rifle. However, good support can only be obtained if no muscular effort is used. In order to ensure this, the weight of the rifle must be distributed to the arm bone corresponding to the line of force. To achieve this, the angle that the forearm makes with the upper arm should be kept back and nearly vertical to the palm rest and/or the lowest point of the stock. The weight of the rifle is distributed to the body by the bones of the hand and of the forearm. Here the left elbow plays an important role.

The position of the left elbow – The elbow is the connection point between the hand and the body. Consistency in lateral hold movements of the rifle largely depends on the exact placement of the left elbow. It should be placed on the hipbone or somewhat to the right on a level with the abdominal.

There are also some variations. If the upper arm is too short, the elbow may not rest on the hipbone or at the abdominal muscles, but it is the natural placement of the upper arm against the ribs that provides support to the elbow. This is still using bone support. It is just a longer and somewhat more flexible path from the left arm, to the rib cage, to the spine, to the hips and down to the floor through the leg.

To orient the hold, consistently positioning the left arm and elbow is extremely important. Otherwise there will be a strain on the muscles affecting horizontal stability of the rifle.

Left Hand Positions

- The following slides show several supporting hand positions
- What hand positions should you recommend and why?
  - Closed fist is most common
  - Other hand positions possible
- Are there any other acceptable hand positions?

Student Notes:

The position of the left hand – The left hand is the "holding hand" and must assume some fundamental functions:

The left hand is the contact point for the stock or the palm rest. It must provide solid support to the rifle, stabilizing its vertical movement. The height of the aiming position and/or the whole posture (including the head) will be influenced by the way the left hand is placed.

There are some major variations in hand and finger positions considering use of bone support: The hand forms a fist, with the stock or the palm rest resting on the knuckles; the fore end rests on or between the thumb and the index finger, with the hand open. The rifle rests on the open palm of the hand with the fingers pointing either at the target or to the left. Whichever variation is adopted, ensure that it will distribute the weight of the rifle to the forearm with no muscular effort with the wrist straight. Hand position is influenced by torso length, arm length, and stock or palm rest depth.

If the hand is twisted to the body, the fore arm muscles will be slightly tightened, which may enable better control over horizontal movement of the rifle. If the hand is turned away from the body, control over lateral movement is no longer ensured, although the upper arm and the forearm will be relaxed. Therefore, the individual variation of placing the hand must be found that is reliable and effective and which will give real confidence to the shooter.

Flat Hand Position

- Is this a good position for the right hand?

Student Notes:

This position is sometimes used by shooters with long arms.

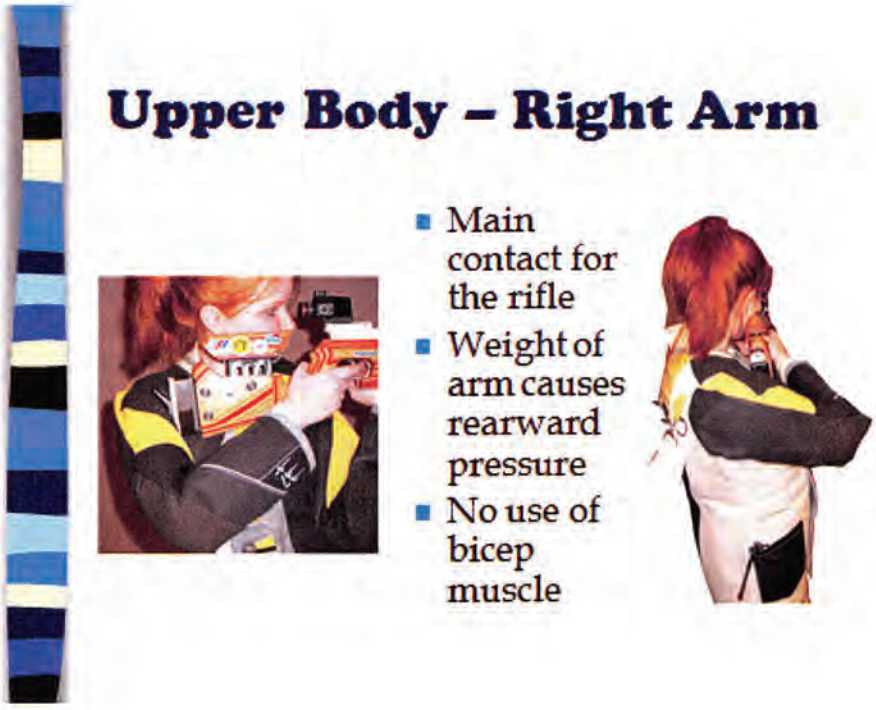
Hand Positions

- Is this a good position for the left hand?

Student Notes:

These positions give good bone support to the wrist and are common to both the sporter and precision air rifle shooters.

They also change where the rifle points (either higher or lower).



Student Notes:

Position of the Right Shoulder – The right shoulder is the main contact point for the rifle in the standing position. Because of the slight angle between the axis of the shoulders and the longitudinal axis of the rifle, there may be only a small contact point between the rifle and the shoulder. Since there is no mechanical support device holding the rifle (sling), the body and the right shoulder should be formed to ensure solid contact with the rifle.

The body is twisted to the left, with the right shoulder even or slightly higher than the left. The shooter should avoid raising the right shoulder intentionally because the tension resulting from this position might change during the shot release, with wide shots as the result.

The muscles of the right shoulder must be relaxed. The rifle rests against the shoulder, with rearward pressure caused by the stabilizing triangle formed by the rifle, the right upper arm and the right forearm. The weight of the hanging arm should create sufficient pressure to keep the butt plate in place. Active use of arm muscle to pull the rifle into the shoulder is not necessary and should be avoided.

Any folds in the material, whether using a shooting jacket or just sweat shirts for Sporter, can cause an inconsistent positioning of the butt plate and thus inconsistent results on target. Help the shooter develop a gun mounting process that produces a consistent placement of the rifle in the shoulder.

Upper Body – Right Arm

- Right arm and shoulder
  - Butt plate firm in shoulder
  - Right arm rests naturally about 30-70° from body

Student Notes:

Position of the Right Arm –In order to provide a larger contact area, the position of the right arm can be changed. There are two extreme variations, both of which have been used with great success:

- The right arm is positioned nearly at right angles, *i.e.,* the angle of the armpit to the shooter's side approximately 70 to 80 degrees, or,
- The right arm rests naturally against the right side of the chest (about 20-30 degrees).

Horizontal positioning generally provides a larger contact area between the rifle and the shoulder. This gives a feeling of greater stability to the shooter. Moreover, the right hand is properly angled to ensure a natural and comfortable hand position on the grip. However, the tension on the muscle of the shoulder lifting the arm, the deltoid, may be regarded as a disadvantage, but it can be trained to be consistent to eliminate any movement caused by the way the rifle is being held.

In the relaxed position no activity of the muscles is noticed, so that this source of movement will be greatly diminished. But the shooter may not have a strong feeling of stability since the contact area between the rifle and the shoulder is reduced.

When working on the position of the arm, the coach and/or shooter must realize that the shooter's build and the "feeling" experienced in each and every position variation are to be taken into consideration. Therefore, a shooter should choose one variation, work on its refinement and train themselves in it.

In either variation, rifle contact with the shoulder may be improved by offsetting the hook butt plate both in horizontal and vertical directions. If a butt plate is used the same results are achieved by offsetting it sideways to the right or left according to the width of the shoulder.

Right Hand

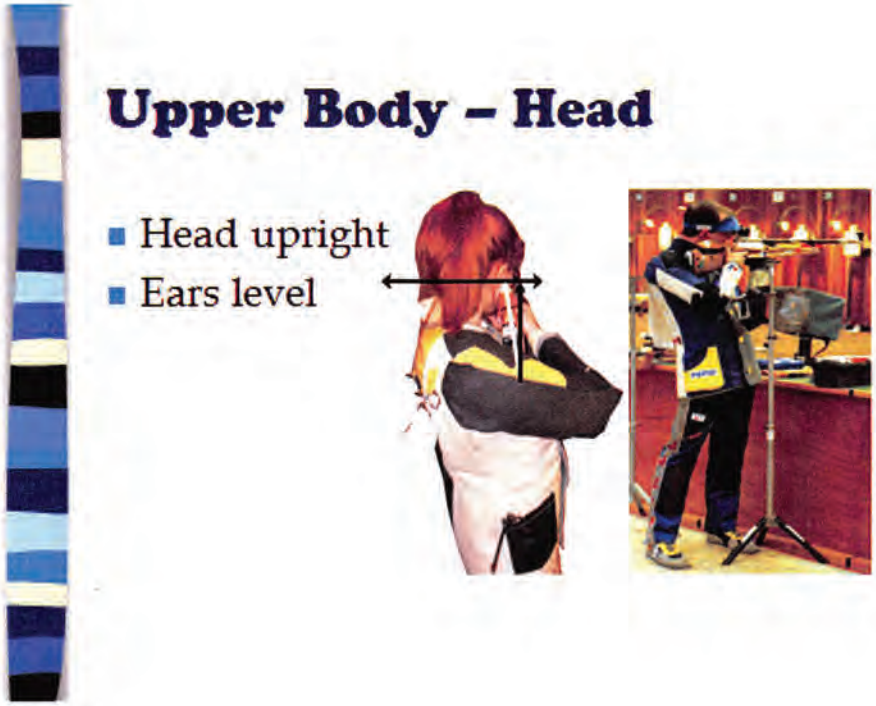
- What is the difference in these two pictures?
- A loose grip may be less consistent
- A firm grip can be maintained and repeated

Student Notes:

The right hand – The main task of the right hand get the trigger finger in the proper position to activate the trigger. The pistol grip should be held without any muscular effort, but with moderate pressure, so that lateral pressure onto the pistol grip is avoided. The trigger finger must be free of the stock, so that the trigger may be pulled directly to the rear (in line with the axis of the bore).

The wrist should be straight so the hand can grasp the rifle grip naturally without a bend to prevent any tensions in the forearm.

The pistol grip on the rifle may need to be shaped to conform more closely to the size of the athletes hand. Material removed for smaller hands or added for bigger hands.



Student Notes:

Head Position – As balance is of utmost importance in the standing position, efficiency of the balance apparatus in the ear and the eyes must be ensured.

The structure of the body as well as the balance mechanism favors the straight and natural position of the head. Therefore, shooting with an upright head position has been advocated in the past. Meanwhile, some of the top shooters tip their heads forward towards the rear sight. This puts a very slight tension on the neck muscles, but doesn't seem to affect the hold. A side benefit obtained by tilting the head forward, the rifle can be held lower and thus gain greater stability in the body-rifle system. According to latest findings, which are emphasized by some outstanding performances in the standing position, the function of the balance apparatus is not affected by the tipped down (forward) position. Whichever head position the shooter uses is up to the shooter.

While tipping the head forward does not appear to cause major problems, tipping the head to the side to look through the sights does. The solution postulated for decades has been to bring the rifle to the head and not the head to the rifle. This "tipping" of the rifle or "canting" must be considered, but remember that however the rifle is held, whether canted or vertical it must be consistent (as we shall see later) from shot-to-shot. If the head is tilted towards the rifle, the pressure applied by the head against the cheek piece must be consistent for each and every shot.

If a shooter has trained for a very long time (years) in one position variation he should generally remain with it, rather than be forced to change.

2 – Practice Body Position

- Put shooter into position without equipment*
- Work with inner position

*Note: request permission to touch

Student Notes:

This is the most important part of building a position. The idea is to get the mind and body working together as a team. The shooter must have a "feel" for the position. The purpose of developing the position without equipment is to develop that "feel." Have the shooter get into and out of position as many times as it takes to learn the proper body position. Teaching this action lasts throughout a shooting career.

3 – Practice Rifle Position

- Bring rifle to the shooter and resume position
- What do we look for?
- Position elements OK?
- Add clothing to the position.
- Still OK?

Student Notes:

Now we bring the rifle to the position–still without other equipment (*i.e.,* shooting coat). After the shooter has the position in mind, now it is time to add the other accessories. The coach will, most likely, have to re-adjust the position again. After adding the accessories, the changes to the position are usually minor because of all the work without the rifle.

The left elbow (right handed shooter) rests naturally on the rib cage or on the hip bone. Think about a vertical support column being formed by the left leg and left forearm.

There are several accepted left hand positions. The important point is that coaches need to understand that the hand position depends on the length of the left forearm compared to the length of the torso and neck.

NOTE: It is a good idea for the athlete to get into position several times. Each time have the athlete close his/her eyes and feel the position in their minds (develop the inner position or kinesthetic sense).

The shooter should analyze: is the left wrist straight, head erect, right wrist straight, and trigger movement straight to the rear. T he butt plate is lowered to get the rifle high in the shoulder for a correct head position.

4 - Align the Position

- How do we move NPA?
- How do we move the position horizontally?
- How do we move the position vertically?

Exact placement of the elbow on the hip will determine where the rifle naturally points.

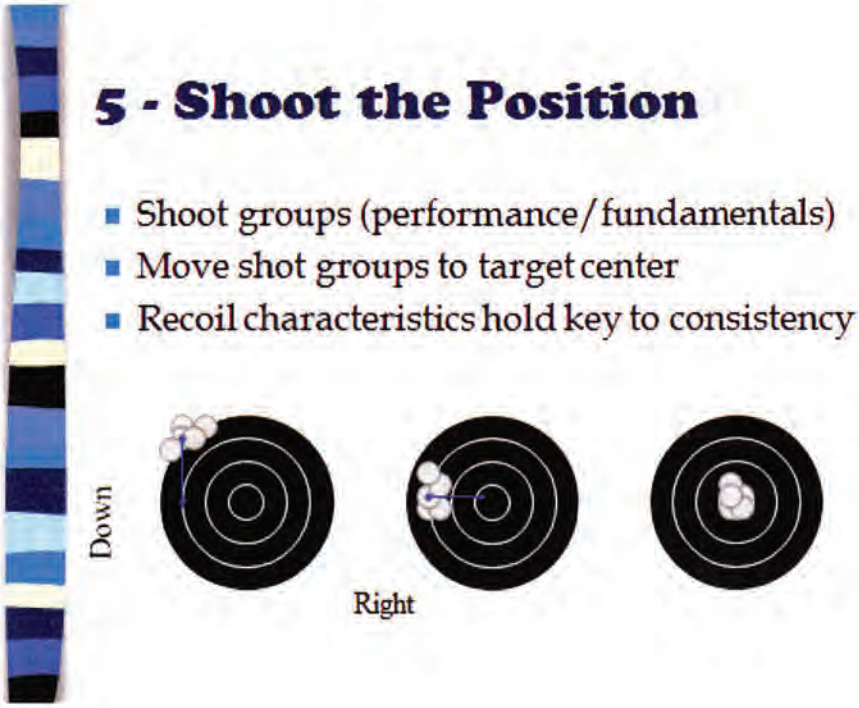
Student Notes:

Orienting the Aiming Position – Vertical corrections can be made by changing the position of the left hand, by changing placement of the palm rest, by adjusting the butt plate and/or hook butt plate or by moving the feet further apart or closer together.

If the hand is moved to the rear near the front of the trigger guard, the muzzle will rise. If the hand, or the palm rest, is placed farther forward, the muzzle will sink. The muzzle rises if the butt plate is moved upward. If the butt plate moved downward, the muzzle will lower. The muzzle will rise if the feet move further apart or sink if the feet are moved closer together. These changes are made when aiming is being oriented. Once the desired position of the hand and/or the butt plate has become established, it should be maintained. Minor changes can be made with breath control. Horizontal corrections are made by changing the placement of the feet, not by using muscular effort in the upper part of the body or in the arms. This results in excess tension on the muscles of the legs and the body, affecting control over balance.

In order to avoid excessive muscular effort, horizontal corrections are made by a change in the placement of the feet in relation to the line of fire. If the feet are turned to face the target, the muzzle shifts to the left or, if they are turned away from the target, the muzzle moves to the right. Minor changes are accomplished by moving the toes. The hips should always be kept perpendicular with the feet (vertical plane) to prevent any tension on the joined muscles of the hips and the feet, care must be exercised that, when moving the feet, the hips are turned with them. Do not allow the hips to rotate!

Note: Consistent placement of the elbow is important. Slight changes in the position of the elbow result in inconsistencies in NPA.



Student Notes:

Shoot 10 groups, 3 shots minimum each. Do not use scoring rings! Score is not important yet, MASTERING the FUNDAMENTALS IS!

Once the groups are acceptable move the groups to center (zeroing). Once the shooter understands the fundamentals, start using the scoring rings. The exercise sets a good foundation to build marksmanship skills upon.

MOVE FROM SIMPLE TO COMPLEX! IF ALL ELSE FAILS RETURN TO THE BASIC FUNDAMENTALS!

Rifle Movement and Recoil Characteristics

The dominant movement in the standing position is always heel-to-toe. Vertical movement in standing is caused by side-to-side movement. The vertical movement is minimized by the direct bone-to-bone support column afforded by a correctly built position. This movement of the rifle should be level, *i.e.*, the muzzle must always return to its original position. Training helps!

Movement caused by the recoil of the rifle is a key indicator of position quality. If recoil is not consistent (shown by the muzzle jumping in any other direction other than straight up), the shooter must recheck NPA, placement of the support arm and elbow, the upper chest and shoulder region and the placement of the feet. These checks have to be made until the ideal position has become established and reliability in shot characteristics (recoil) is achieved.

Support Equipment

- Scope
- Stand
- Tools
- Ammo

Student Notes:

We want to make as few movements as possible in our positions. For example, we can place the spotting scope so the non-shooting eye can be turned to it without moving the whole position. Additionally, we can use a shooting stand to rest the rifle between shots and to hold the ammunition in a convenient place. This procedure applies for all of the shooting positions.

Don't forget the tools that you may need to adjust the rifle or sights. There is nothing worse than building a great position and then realize that you forgot an important tool, piece of equipment or worse… the ammunition!

Season Training Plans

How to Plan Training, Structure Practice and Get Better

Student Notes:

Training Plan Framework

- Competitions are the framework leading to long term goals
- Junior Olympics
- NRA Sectionals

Student Notes:

Junior Olympics are generally considered the most important competitions of the year. In order to go to Colorado Springs, your athletes must qualify at your state JO qualifier event.

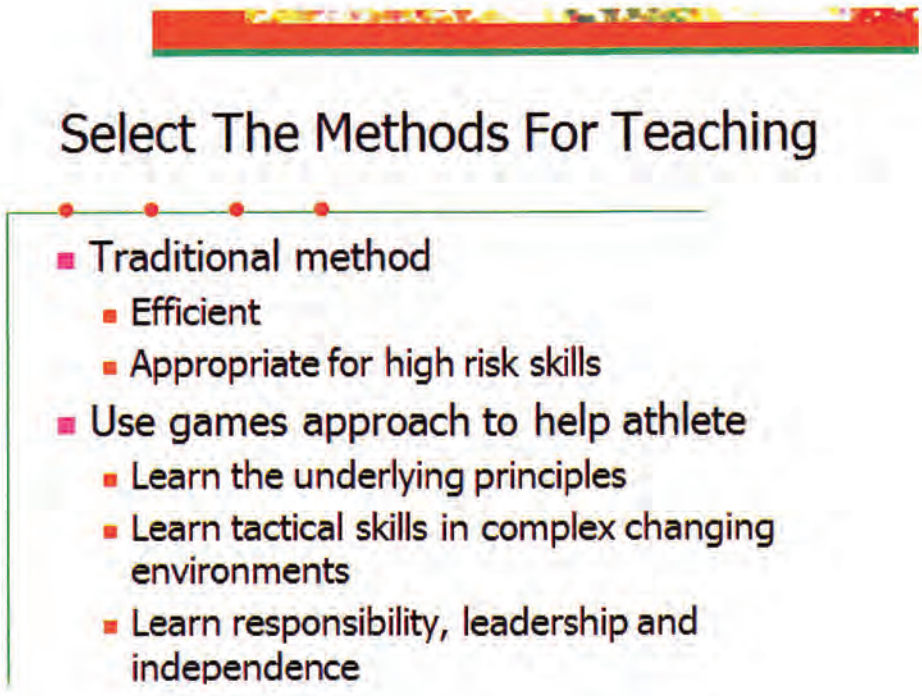
One male and one female State Qualifier will be invited per event, per state, provided they fire above the minimum required "State Qualifier" score. Automatic invitations are issued to all who fire above the minimum "Automatic Invite" score. These state qualifier matches are usually shot in December or January.

The training plan depends on how much time the athlete has to get ready.

It is beneficial to have supporting competitions to try out new positions and strategies. Home practice matches are also beneficial to test the skills of the shooters.

Once the athlete qualifies for the JOs, which is usually held in April, the annual training plan should be modified to capture the JOs.

Collegiate shooters have a similar two-step process; Sectional scores qualify shooters for the NRA Collegiate Rifle Championships or the NCAA Qualifier Match qualifies the shooters for the NCAA Rifle Championships. These shooters are also probably attending the USA Shooting National Championships and/or Camp Perry in the summer season.



Student Notes:

The traditional method often includes doing drills, coach-centered, monotonous practice, with little athlete input. While the traditional method is effective, a games approach may be more interesting for the shooter. No matter what method the coach chooses, make sure the underlying principle of the training is focused on the fundamentals.

Some simple games are listed below. Use your imagination to create new versions or games to keep practice focused and interesting as the shooters work on technique.

Shot Calling–Teams of two. One shooter fires without observation. Partner marks shooters call on blank target as well as the actual hit. Shooter gets 1 point for correct ring and 1 point for correct hour on the clock face. Vary depending on skill level.

Trump–Two shooters shoot alternating on the same (or their own) target. The shooter with the shot closest to the center wins the target. Winner is the one who wins the majority of the targets (10/20/40).

Without Eight–The shooter tries to shoot as many shots as possible on one target without injuring the eight ring (beginners 7 or 6 ring). Winner is the one with the most shots.

Blank Target—Shoot on a blank target while focusing on sight alignment/sight picture and trigger control.

Student Notes:

Some more advanced games that you can try.

Fox Hunt–Give one of the weaker shooters one shot under finals commands. This is the "fox's" lead. All of the shooters, "hunters" and the "fox", then shoot 10 shots under finals commands trying to catch the "fox". Winner is the fox if no one catches him/her.

Tenth-Series–Shooters shoot several series (2-6) of 10 shots each. Evaluate the targets in tenths. Winner is the one with the highest evaluation for the series.

Cut Out Center – Cut out the eight or nine ring for air rifle. Shots through the hole that do not cut the edge are considered tens. This can help get the thoughts off where the shot is and help develop longer runs of tens.

Eyes closed–Hold, close eyes for three seconds, pull trigger. Are shots near center? NPA shifts? Always consider safety!

400 Points–Who can shoot 400 points first?

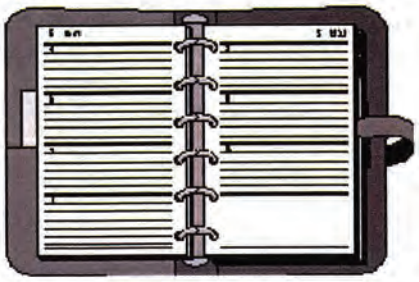
Points per Hour–Who can create the most points in 60 minutes (30/20/10 minutes)

Who is faster?–Tiebreaker for any of the tasks, in direct competition, the faster wins.

Time Bonus–In games like Trump, the shooter who shoots first earns a 0.2-point bonus, so an equally good shot would win.

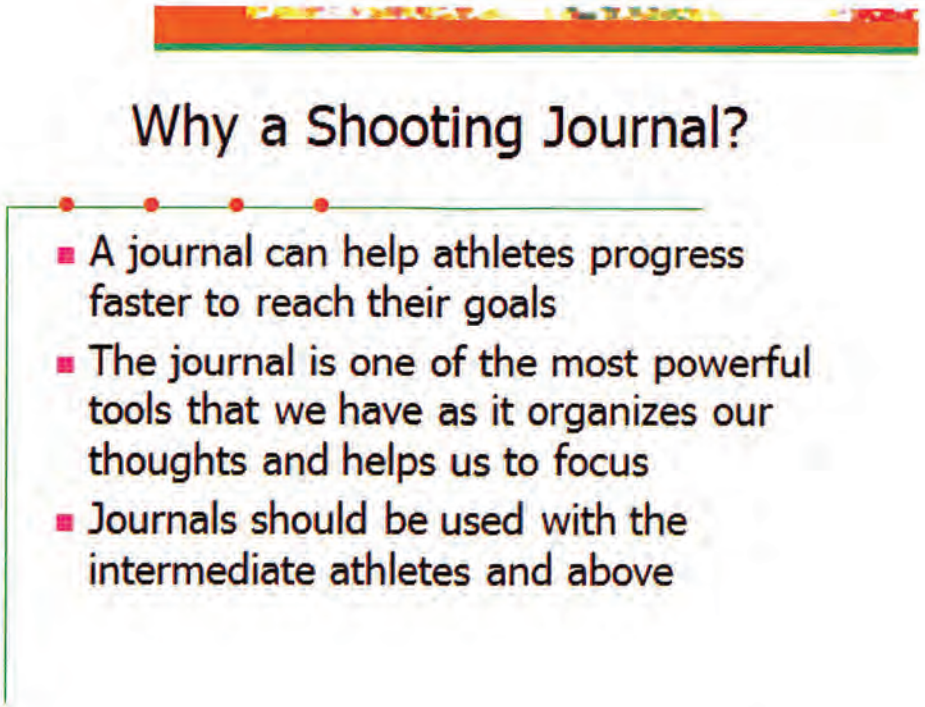
Tools to Improve Performance

- Training plan
- Shooting journal
- Shooting journal handout



Student Notes:

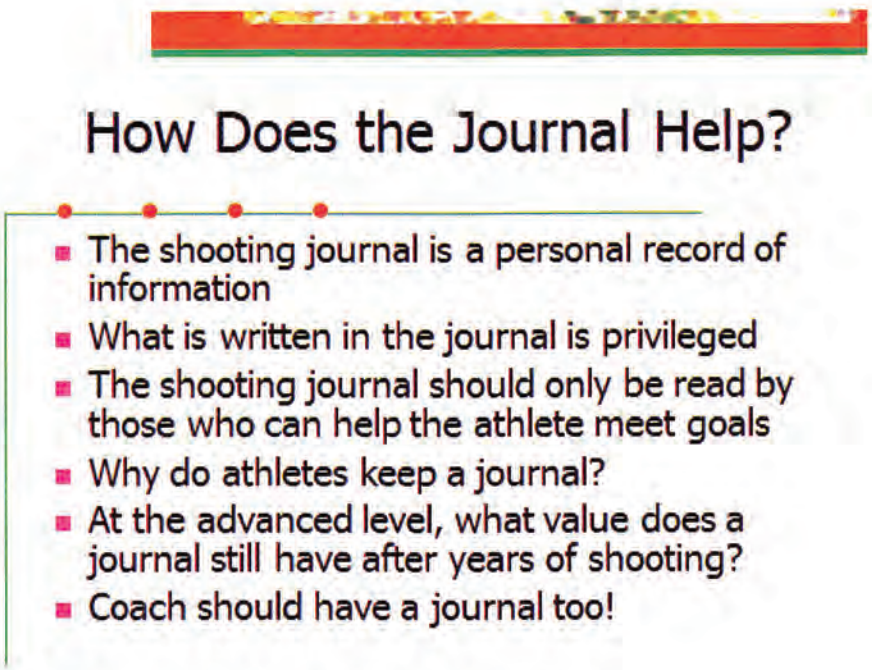
There are two very useful tools that shooters can use to enhance their attention, thus improve performance. These tools are the shooting diary and the training plan.



Student Notes:

Shooting journals should be used by beginners, intermediate, and advanced athletes. It is important that the shooters write in the journal the stance positions, grip, and procedures needed to execute their shot. The beginning shooters should write in their journal to identify proper sling placement, location of fore-end stop, and butt assembly positions. The advanced athlete will use the journal for additional reasons such as:

- Problem solving
- Equipment checklists
- Performance evaluations
- Score keeping
- Goals
- Contacts (companies, people)
- Classification/membership cards and numbers
- Equipment serial numbers (in case they are lost or stolen)



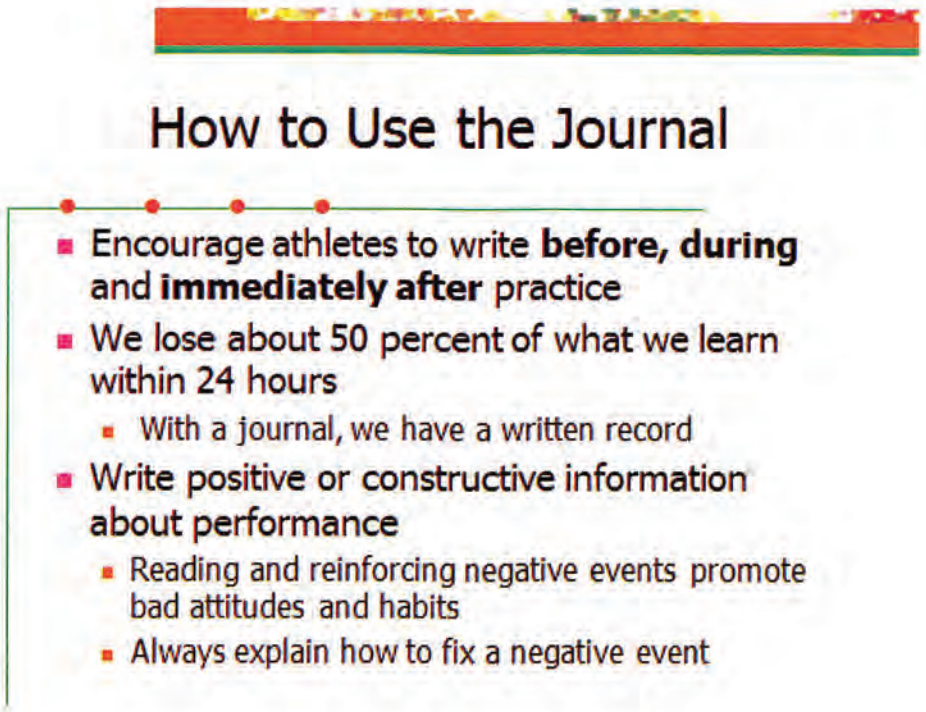
Student Notes:

Shooting athletes keep a journal of their goals and progress. It provides a reliable resource when setting up new training plan strategies. Not only does it give athletes a reference when facing challenges, it also gives confidence to the athlete when making changes.

A journal saves time when figuring out problems. It helps eliminate already tried methods in problem solving, and keeps results of those solutions ready for future use.

No matter how many years athletes have been training, a journal remains the one constant tool in athlete's lives. It can be relied on for the truth, and a confidence builder when looking back to see how far they have come. Something can be learned from every shooting experience. Keeping track of that journey tells a very exciting and rewarding story no matter how far athletes take their careers.

Not only is the journal is important for the athlete, coaches should also use one.

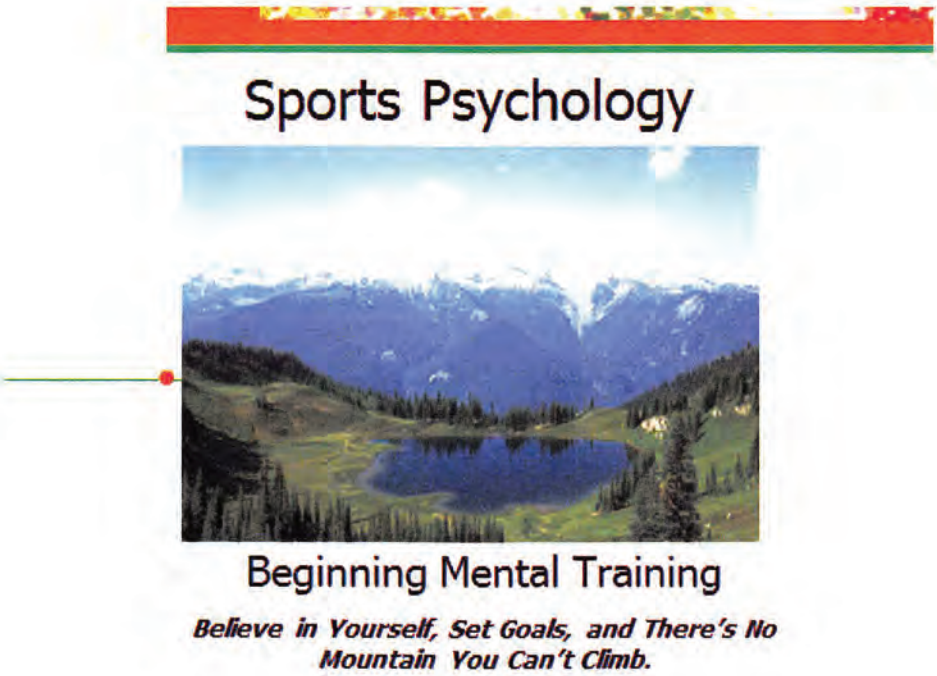


Student Notes:

- The journal helps the athlete reinforce the positive message to the conscious mind.
- The journal helps the athlete organize training.
- The writing process helps increase self-awareness making the athlete think about and analyze performance.
- The journal helps with "CONSISTENCY" by allowing the athlete to record equipment settings and performance.
- The journal is a problem solver helping the athlete identify problems, track progress, and write solutions. It also keeps the athlete from repeating the same mistakes in the future.
- The journal provides a record for experiments and their results.

Journal Details

Goals > Mission Statement Settings, Position Adjustments, Shot Plans, Competition, Refocus Plans, Scores, Range conditions, and how they feel physically & mentally. All the things that went right today! Things they learned from challenges…



Student Notes:

The word psychology comes from the Greek word "psyche" which means mind or soul and "logos" meaning to study. Psychologists study both the outward or "overt" behavior as well as "covert" behavior. Overt behaviors are typically those behaviors that are observable (i.e., what the athlete does or doesn't do), while covert behaviors are not observable (i.e., what the athlete is thinking). Sports psychology is the study of human behavior in the context of sport and exercise.

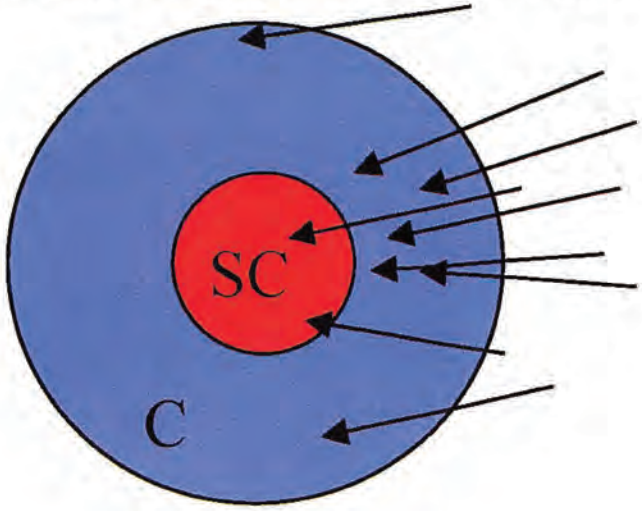
How We Learn – Conscious

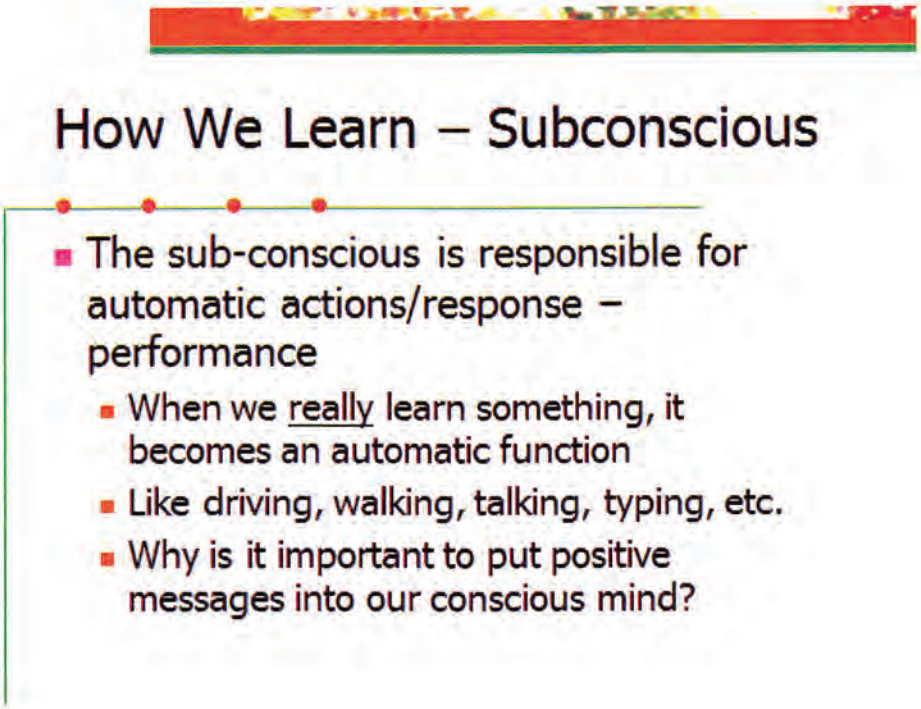
- The conscious mind is responsible for collecting information – learning
  - A lifetime of information fed into your memory cannot be erased
  - We may not be able to access it, but it is still there!
  - We learn by putting messages into our minds, over and over and over...
  - Finally, the messages become automatic

Student Notes:

Conscious and sub-conscious are two separate levels of our minds?

We learn by using all of our senses to repeat an action until our subconscious has the pattern. Some examples of how we have learned basic skills are typing, walking, talking, writing your signature, etc. We didn't start out too well but after a while we start to do it better. Pretty soon we get to the point where we don't think about it. When we do start making mistakes again it is because we start to control the action, instead of letting the subconscious manage it.

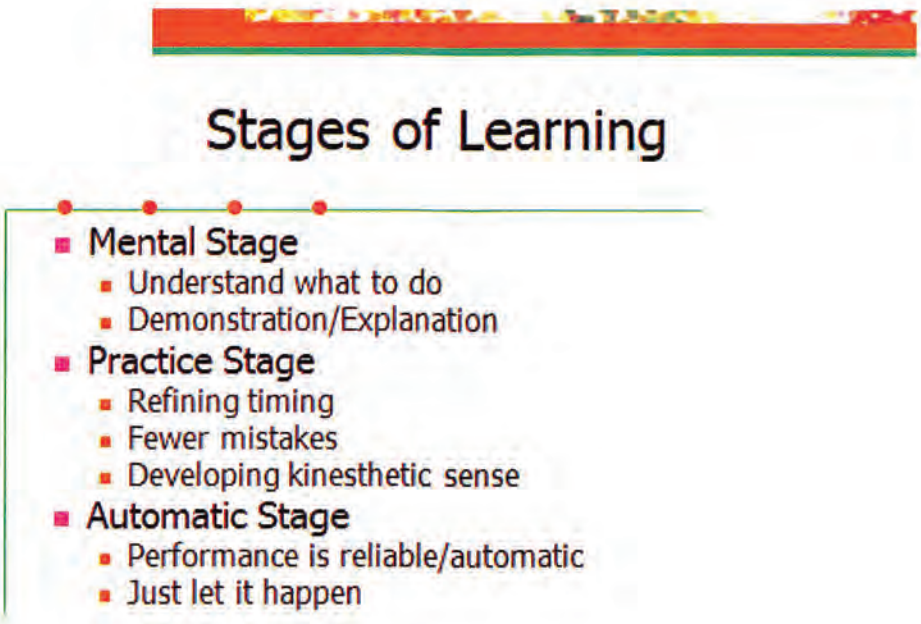




Student Notes:

When we keep putting negative messages in our conscious mind, we reinforce and learn bad habits or incorrect procedure. **KEEP YOUR MESSAGES POSITIVE.** Phrases and words like "I can't…" and "I'll never…" or "I'm stupid…" are all negative messages. Always avoid saying negative things while at the range.

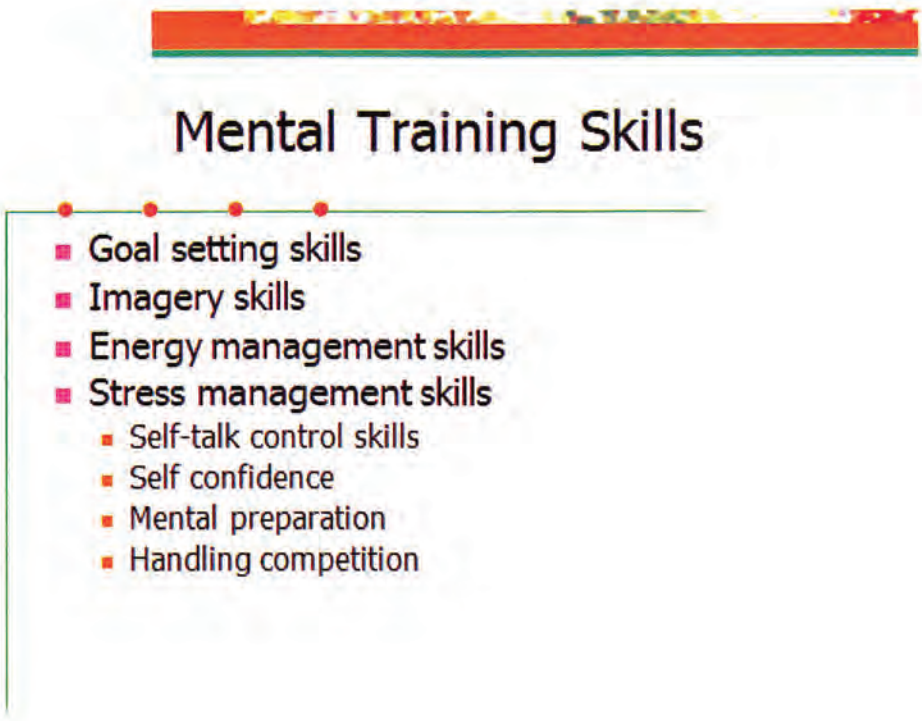
What happens when a shooter thinks, "I can't afford to shoot another seven"? They will probably shoot a seven (or worse). Why? There is some thought among psychologists that the mind doesn't deal in the negative. It hears "Shoot another seven", so it does exactly what it hears! Tell the mind what the desired outcome is.



Student Notes:

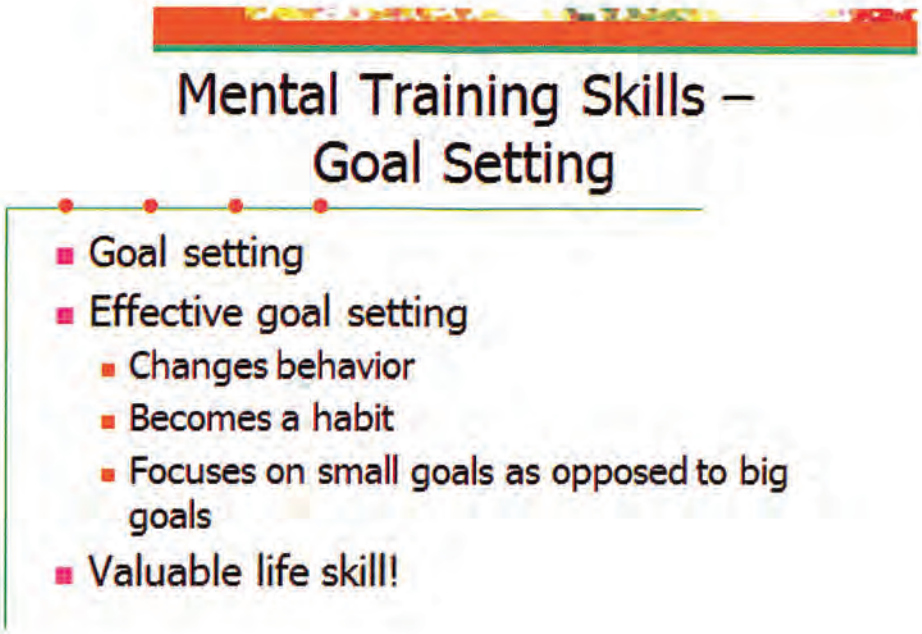
In the practice stage the emphasis is on the **quality** of practice to refine the technique. The practice stage takes a lot more time than the mental stage. The athlete and coach should determine how often the athlete should practice, how long each practice should be, whether to practice the routine in whole or in parts, and when they should move on to more advanced technique.

Learning in the automatic stage is different yet again. The athlete takes increasing responsibility for their technical skill development. Although most sport skills are never totally mastered (there is always something to work on), the shooter must learn finer details of the sport.



Student Notes:

There is no magical, quick fix program for shooters to help them shoot better. Lots has been written and said about how shooting is 98% mental and 2% physical. At the very highest levels of the sport, the mental aspect is critical to success, but at the beginner level, the sport is almost 100% physical as the skills are being learned.



Student Notes:

Goal setting is as necessary as having a coach. So, shooters need to learn it to improve.

Goal setting helps give the athlete an edge in three areas.

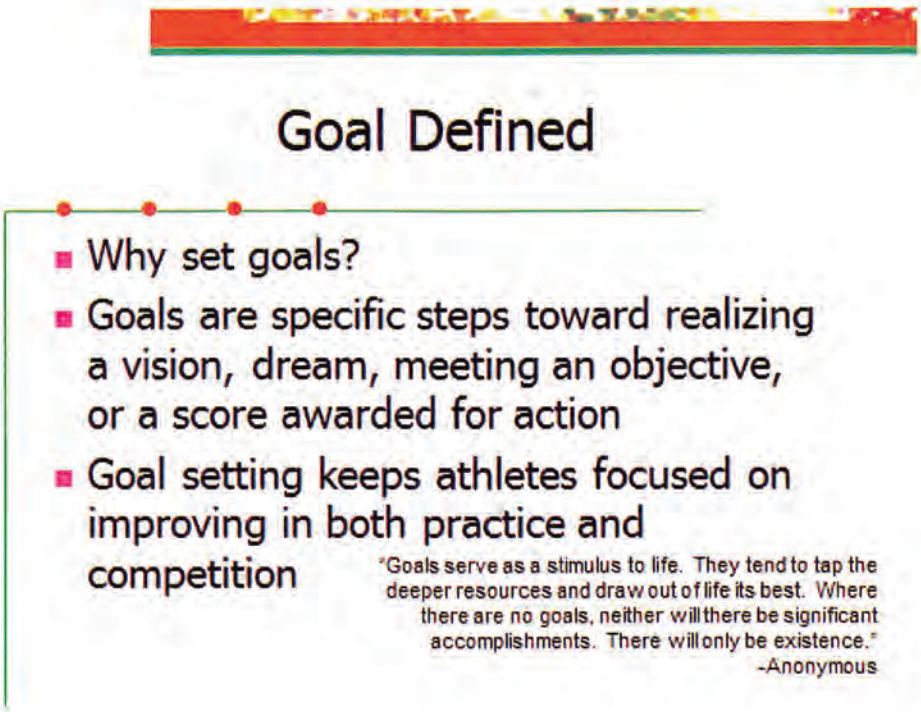
- **Direction** – Goals tell the athlete where they need to go and how to get there.
- **Feedback** – Goals tell the athlete when they are making progress.
- **Support** – Goals keep the athlete going when they might otherwise give up.

Effective goal setting changes behavior.

Athletes find that:

- Training is more productive, they get more done in less time.
- Competition behavior is more focused, less nervous.
- Practice sessions are more productive; working on other areas critical to good performance, instead of the same old thing.

Effective goal setting becomes a habit. Effective goal setting pays more attention to the little goals than the big goals. Setting big goals (National Champ, Olympic medal, All-American) is the easy part. The tougher part is setting the smaller goals (milestones) that get the athlete to the bigger goals. By building the annual, monthly, weekly and daily goals, they begin to get to those big ones. This takes work, and needs to become a habit, but it will change behavior.



Student Notes:

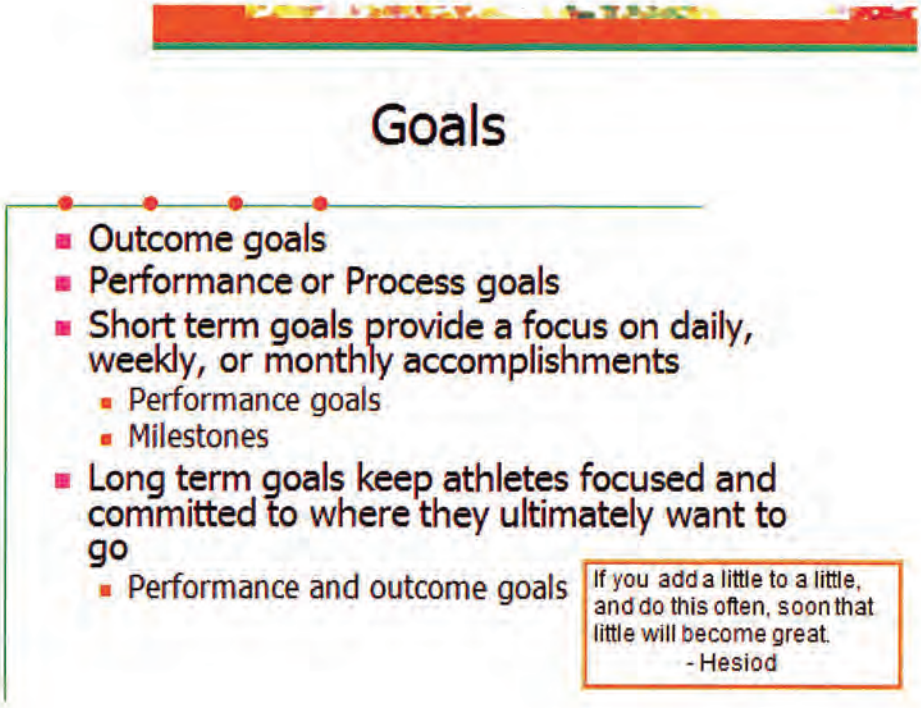
The first step in defining any goal is for the athlete to ask, "Why do I want to achieve this goal?" The answer to this question gives the shooter something to fall back on when achieving these goals is being challenged.

A wish is a dream without action. Setting a goal is a dream with a plan of action. Goal setting can be thought of as a process of establishing specific objectives for change in behavior. The shooting sports are well-suited to goal setting since the results are usually quite objective and measurable in the form of scores.

In order to get better the athlete must change. Think about that for a moment.

Maybe the athlete should first ask, "Why do I want to change?" There are many benefits in establishing goals. Goal setting gives athletes direction, improves their self-worth and confidence as progress is made. Shooters and coaches must develop a systematic program in setting goals. As coaches, we need to work with our athletes and help them establish goals with a work ethic to achieve them.

The importance of goal setting is to keep the athlete focused on improving both in practice and in competition. Accomplishing goals improves motivation and increases energy levels. Additionally, goal setting provides the plan to reach the shooter's dream.



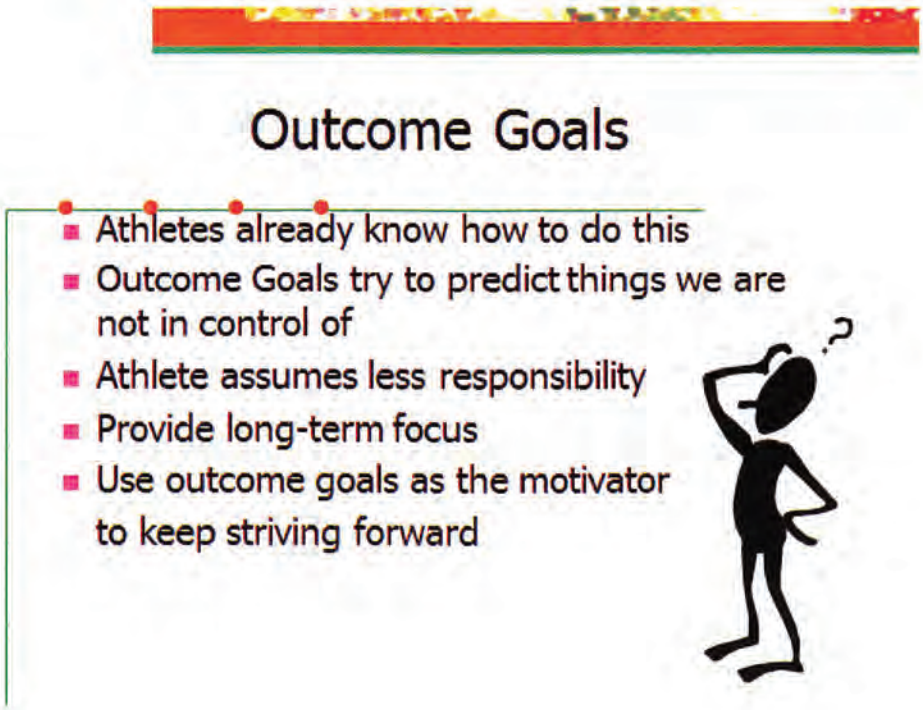
Student Notes:

There are two types of goals; **Outcome** and **Performance** or sometimes performance goals are referred to as **Process**. We will talk more about these on the next few slides.

There are also two general timeframes for goals; **Short term** and **Long term**. **Short term goals** help to provide a focus on daily, weekly, or monthly accomplishments. While daily training sessions can become boring after years of practice, short term goals provide a purpose to get something accomplished every day. A lot of satisfaction is found in achieving short term goals. Accomplishments can be measured, often building self-confidence from this experience.

Long term goals help to stimulate athlete motivation and commitment. They reinforce patience and perseverance. Examples of long term goals: win the state JORC this coming year, make the National Development Team, or win a gold medal in the 2020 or 2024 Olympics.

Long term goals are the sum of everything that has, is, and will happen on a path to success. Success is the result of the journey to get there. All the lessons learned and talents gained along the way are intrinsic rewards to be used throughout life.



Student Notes:

Athletes already know how to set outcome goals. It is easy. But setting only outcome goals, like winning the state championship or making the National Development Team, will not change behavior because the outcome is not within their control. These goals are affected by the performance of other competitors or other factors which the athletes do not (and cannot) control. Remember, only one person can win the competition.

Outcome goals try to predict things that the athlete cannot control. Winning a match for instance or where they hope to place at the end of a shooting competition. They are not in control of the outcome!

Outcome goals by themselves can lead to severe disappointment. Focus on Performance Goals and use the Outcome goal as the motivator to keep striving toward.

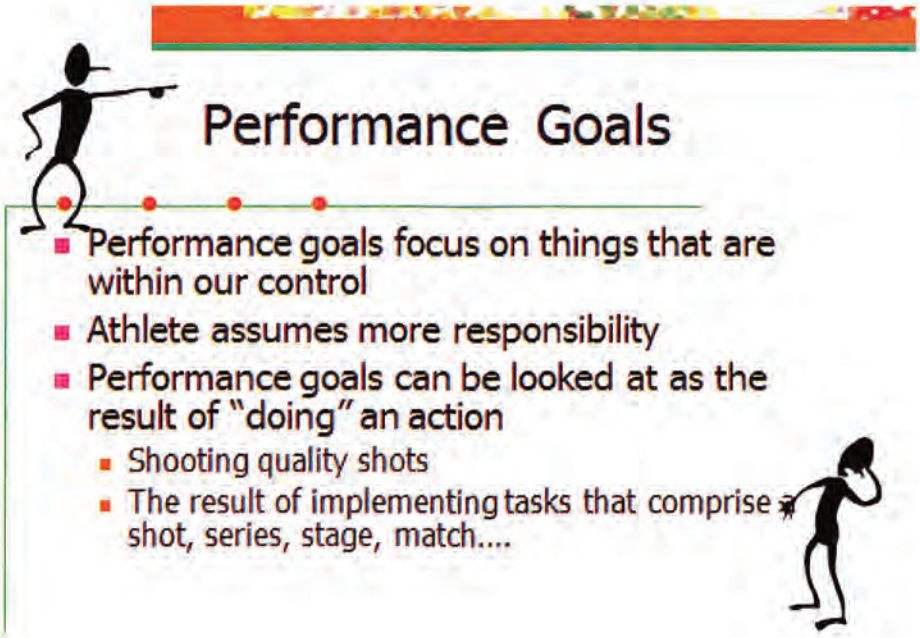
Examples:

Win the kneeling match in the Regional Championship.

Be selected for the Junior Olympic Shooting Team.

Finish in the top three in the state championship.

Defeat Robinson High School.



Student Notes:

Performance goals focus on things within our control. Effort, concentration, shot mechanics, or positive self-talk are examples of task goals. Tasks like these help the shooter determine performance and acknowledge improvements.

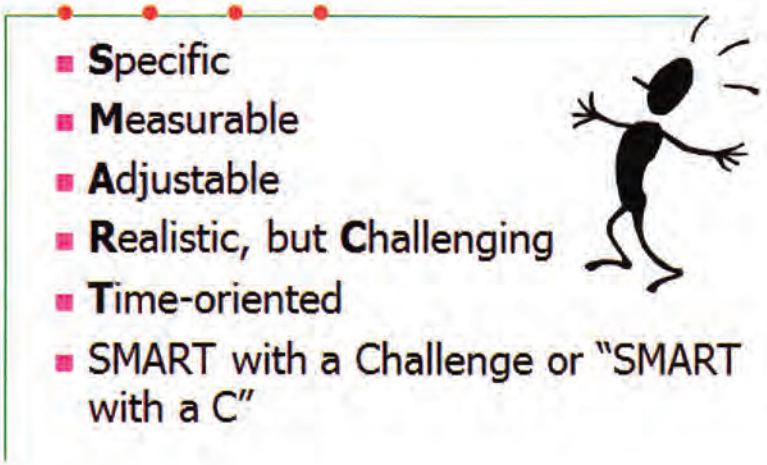
This type of goal is under the athlete's complete control, not the coach, not another competitor. They either do it or they don't, but they are the person that is in control. Performance goals are direct measures of their performance. Examples are: "shooting a percentage of quality shots, or "having good follow through on 80% of shots standing".

Score in any form is not a performance goal. Once the round leaves the barrel, the shooter no longer has control of it. Multiple outside forces may impact on the placement of the shot onto the target. The shooter can only effect the round until it leaves the barrel.

You may ask "What about outside influences like weather or illness?" Help the athlete state the goal so that it is "under typical conditions". No one is in control of the weather, for example, so scores may be less than planned, but the performance should remain such that under normal conditions it would have yielded the planned score or level. Strive to attain personal best performances regardless of the performances of others.

Examples:

Have perfect shot release technique on 95% of my shots standing. Take a mental break whenever I get frustrated. Shoot 75% of my shots as a quality shot (perfectly execute my shot plan) in the standing position.



Student Notes:

A good goal has five characteristics: Each of these Characteristics is an important part of the process of setting goals. An easy way to remember these characteristics is by using the acronym "SMART with a C." Think of it as SMART with a "Challenge."

Specific

Measurable

Adjustable

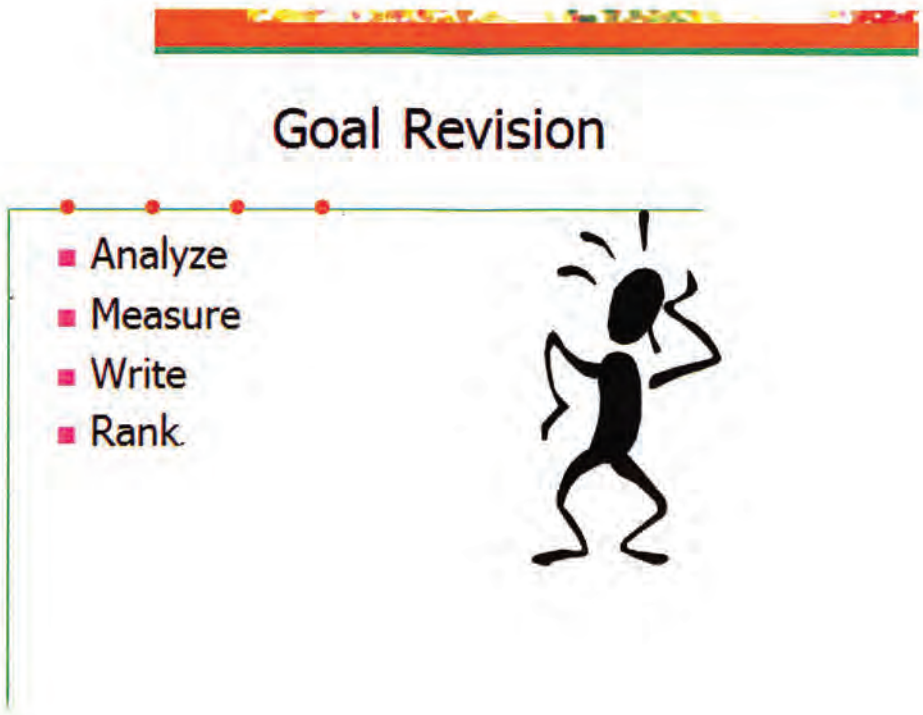
Realistic, but **C**hallenging

Time-oriented

Be familiar with the characteristics and understand how to implement each of them. Goal setting is a powerful tool not to be overlooked. Keep these characteristics in mind as we go through this lesson.

Examples:

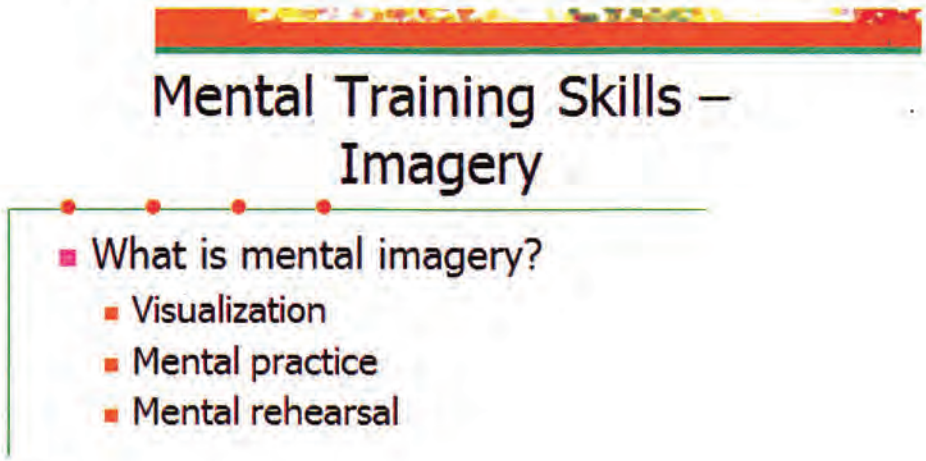
Have perfect shot release technique on 80% of my shots kneeling today in practice. Shoot at least 10 perfect shot executions in the standing position during the match on Saturday.



Student Notes:

Goal setting is a continuous process of analyzing performance, measuring it, rewriting goals, writing new goals, and ranking the priority of importance of goals. Goal setting in accordance with the characteristics is not a "static" process, but it is a fluid and continuing process.

The coach should be involved in the process encouraging athletes and help them develop good goal setting practices. Goal setting is a powerful tool that is much more than a sports psychology technique for improvement. It is a focusing tool to be used in other phases of our lives as well.

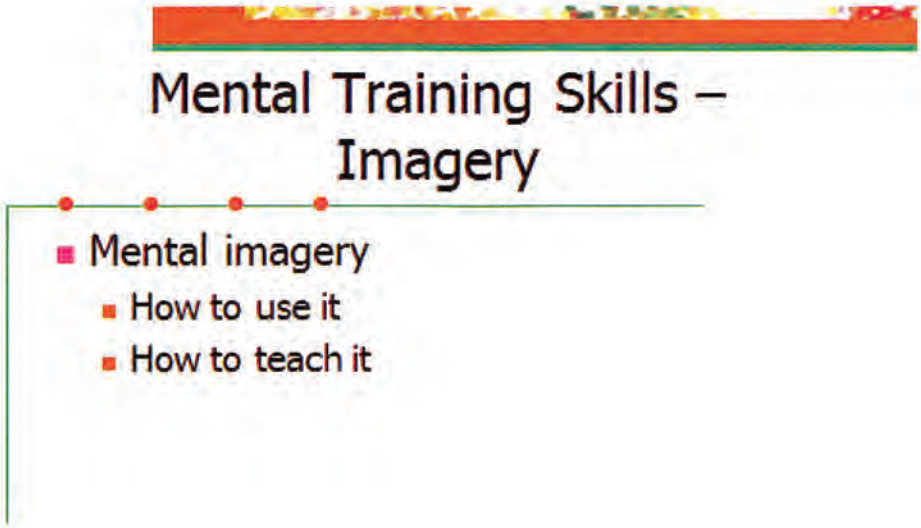


Student Notes:

In addition to imagery, athletes often call this skill by other names – visualization, mental practice, mental rehearsal – but they all use the imagination to help reach their goals. In sports, this involves vividly creating or recreating an athletic performance in their mind.

Athletes can use imagery to improve performance by:

- **Seeing success:** Athletes can see and feel themselves achieving their goals. This helps build confidence that their goals can be achieved and expand their perceptions of their boundaries.
- **Increasing motivation:** When training gets long it can become difficult to maintain the intensity level necessary to get the most out of the practice. Thoughts about past successes or future competitions can help them maintain the needed intensity.
- **Managing their energy level:** Athletes can change their energy level, using calming images to relax or energizing images to "psych" themselves up as needed.
- **Learning and/or perfecting skills:** Additional practice time in the form of mental practice can help them master a skill, or correct an error in skill execution. The skill can be decomposed into the parts or slowing things down to analyze them for technique errors.
- **Refocusing:** Distractions during practice or competition can prevent your athletes from maintaining optimal focus. Imagining what they need to focus on can help get them back on track.
- **Preparing for competition:** Just as athletes need to be prepared physically for a competition, they also need to be ready mentally. They can imagine themselves on the range going through key elements of their upcoming performance. They can also prepare for the unexpected or difficult situations by visualizing themselves successfully dealing with them.



Student Notes:

Be calm and relaxed: Imagery is most effective when the mind is calm and the body relaxed.

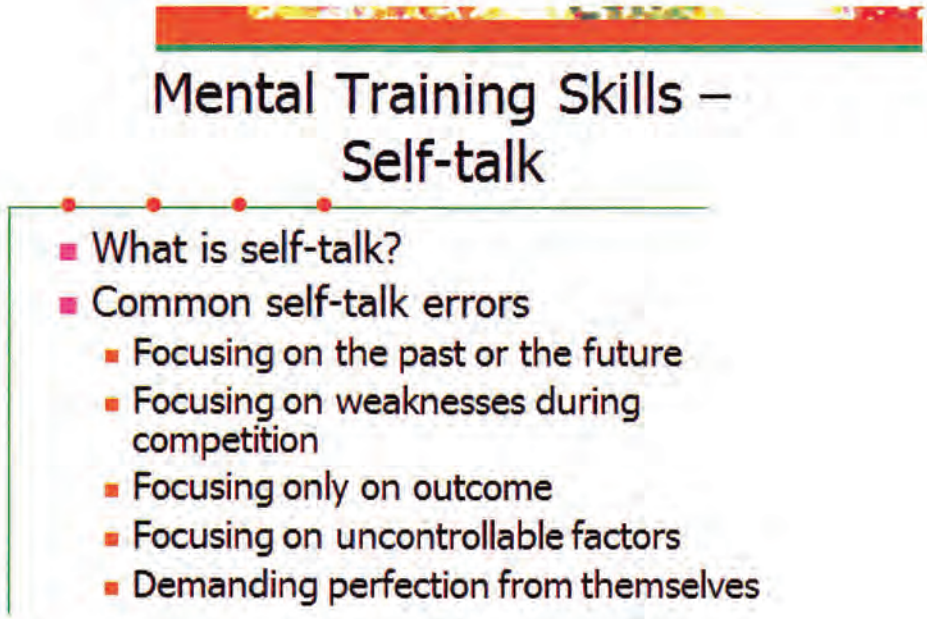
Use all of the senses: Athletes often only use their visual sense when imaging, but it is equally important that they include the other senses as well. What they feel, hear, think, body position, and even what they smell and taste. Detail like the feel of the stock and the sound of the crowd can help make imagery more vivid.

Control the images: In addition to vividness, being able to control the image – seeing and feeling exactly what they want to see and feel – is the other part of successful imagery. Generally, it is easier to imagine themselves as if from inside their bodies and this is probably more effective than seeing themselves from the outside.

Keep early practices easy: It is easier to learn and practice imagery in a quiet, distraction free environment. But, as the skill is learned, transition them to doing visualization in the practice, and ultimately, the competitive environment.

Use their sense of "feel": Make the images more vivid by including body movement to match what the athlete actually does, can strengthen the image.

Practice: Just like everything else, mental imagery can be improved through practice. Spending just 10 minutes a day will do wonders.



Student Notes:

Self-talk includes all the purposeful and random thoughts that run through your athletes mind, and all the things they say to themselves silently and aloud. Self-talk can be positive, help the athlete focus, motivate them ("I can do it!") and serve any number of useful functions. Unfortunately, when left untrained, self-talk often becomes negative, pessimistic, and critical ("I suck so bad, I might as well give up"); definitely not helpful and probably hurts performance.

Common self-talk errors tend to negatively influence performance. Do any of these sound familiar?

- **Focusing on the past or the future:** "I can't believe I shot a seven!" or "If I can shoot the next three I could win." Not letting go of past mistakes or thinking of the future takes their thoughts away from where they should be – on the present.
- **Focusing on weaknesses during competition:** "I don't shoot standing very well." It is important to identify and work on weaknesses…but only during practice.
- **Focusing only on outcome:** "I must win." These thoughts direct the attention to the outcome which the athlete has little control over.
- **Focusing on uncontrollable factors:** "This weather sucks" or "The target is too dark, I can't see" is a waste of their mental energy. They should place their attention on things they can control.
- **Demanding perfection from themselves:** "I have to shoot a 10." It's okay to strive for perfection but it is unrealistic to expect a perfect performance every competition. If they do, it can lead to frustration, doubt and a downward spiral….

Student Notes:

Controlling self-talk is also a skill that your athletes need to have in their mental tool box. For athletes who have fallen into a pattern of negative, self-defeating self-talk, gaining control can be challenging. They may not even be aware of it, the negative talk is so automatic.

- **Become aware of self-talk:** Increased awareness of when and what you say to yourself is an important first step. It is important to not only have them identify negative thoughts but also the situations in which these thoughts typically occur.
- **Stop the negative, replace it with positive:** So now what? You need to "park it" or "stop it" – which is easier said than done. Visualizing a big, red STOP sign is a good cue to halt that negative thought. You need to replace it with a positive, helpful thought or statement.
- **Practice thought stopping:** You need to practice this skill too.
- **Develop competition self-talk plan:** You should develop a competition plan or strategy that includes what you will say to yourself at critical times in the competition. As distracters or barriers pop up develop a re-focusing plan along with appropriate self-talk to get things back on track. Rehearse this over and over until it is second nature.

Student Notes:

Tips for improving self-confidence:

Confidence should be based on observed reality. Thinking about past best performances is real-world proof of your athlete's abilities. When doubts creep in, remind yourself that you have the ability and have demonstrated it in the past.

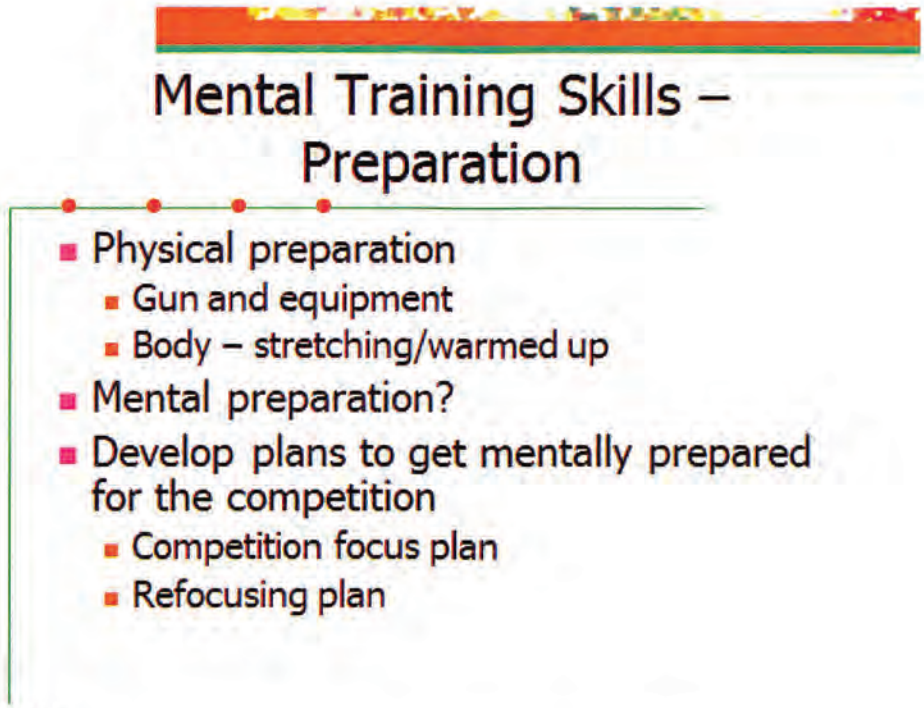
Act confidently. Thoughts, feelings, emotions and behaviors are all related – if you **act** more confidently, the more likely you will **feel** confident.

Think Confidently, Confidence means thinking that you can and will achieve your goals. If you engage in this type of thinking you will be hard to beat.

Build success into training. By ensuring that your training is consistently high quality with successes built in, either small competitions or goals that have been met, will pay big dividends as the big competitions approach.

Set measurable, challenging, yet achievable goals. Every achievement of the goals or milestones your athletes set is proof of their ability. Setting goals with "SMART with a C" characteristics will help build self-confidence.

Use competition simulation at your home range to give athletes the chance to try out plans and strategies they have developed for competition. Make it as "real" as possible: exact time limits, scoring, rules, *etc*. A real match!

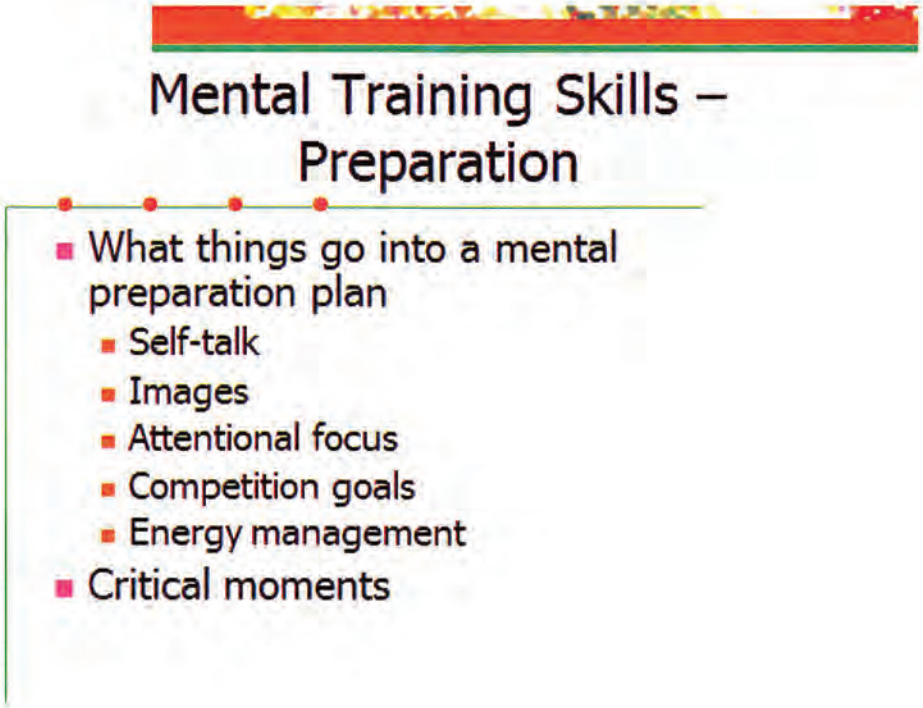


Student Notes:

Most athletes "sort of" have a routine that they follow before a competition. Some listen to music or busy themselves with setting up their equipment and perhaps thinking about their upcoming match. The problem is these routines are generally not planned and not used consistently. It has been developed by chance and when it is most needed (in a high pressure competition) the athlete drops it and his or her thoughts shift instead to expectations, worry and potential failure—things that don't help their performance! You can develop a mental preparation plan that you use in conjunction with a physical preparation plan. This plan needs to be practiced refined and, above all, used consistently to be effective.

Key points to be covered include getting the athlete to

- Attain the appropriate energy level.
- Attain the appropriate focus.
- Rehearse their competition strategy.
- Build-up self-confidence.
- Develop a competition focus and refocusing plan.
- Prepare for distractions and unexpected events.
- Prepare to work through discomfort, fatigue and frustration.
- Keep on task.



Student Notes:

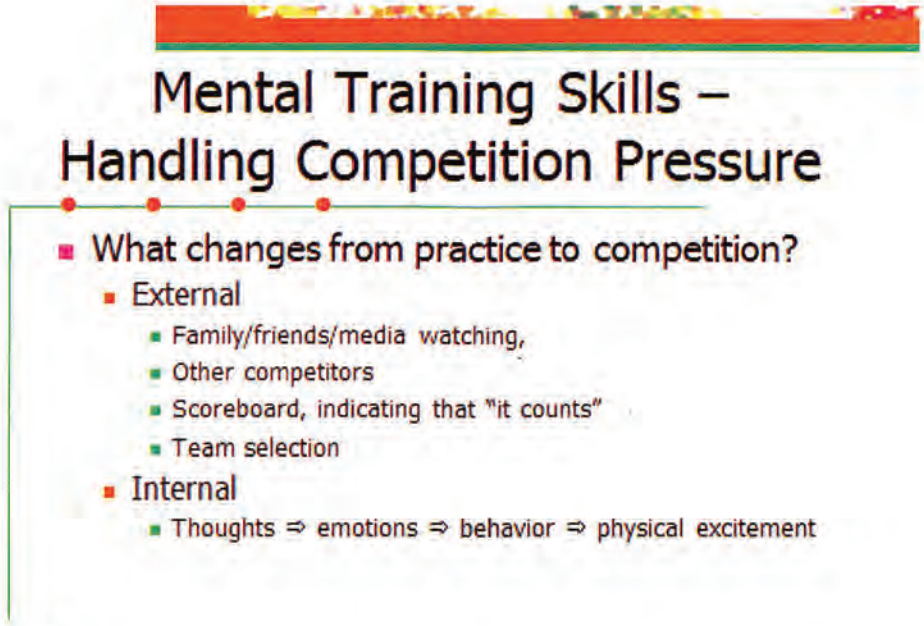
Self-talk: Internal talk should be positive, motivating and instructive. Include cue words that tell they need to do or to help bring on that feeling of confidence and being ready.

Images: Mental images should be of successful past performances or the upcoming one. Imagery can be used to rehearse the competition, the strategy or the competition focus.

Attention: Your attention needs to be on the task in front of them. Visual reminders or cue words may help to direct attention appropriately.

Competition goals: What is it that the athlete is trying to accomplish today? Is today a training match that the athlete is using to test a new strategy or technique or is this the big one? Make sure the athlete has control over their goals and commit to striving toward them.

Energy management: The athlete's energy needs to be at the right level and the athlete needs to be able to increase it or decrease it as the situation warrants. Notice that we are now using the skills that we have discussed in the first part of this section. Remember, it takes time to develop these skills and to be able to implement them in a consistent manner. Reward the small steps that you see toward that end. When you notice a problem that could be helped by one of these tools the time may be right to introduce it to the shooter.



Student Notes:

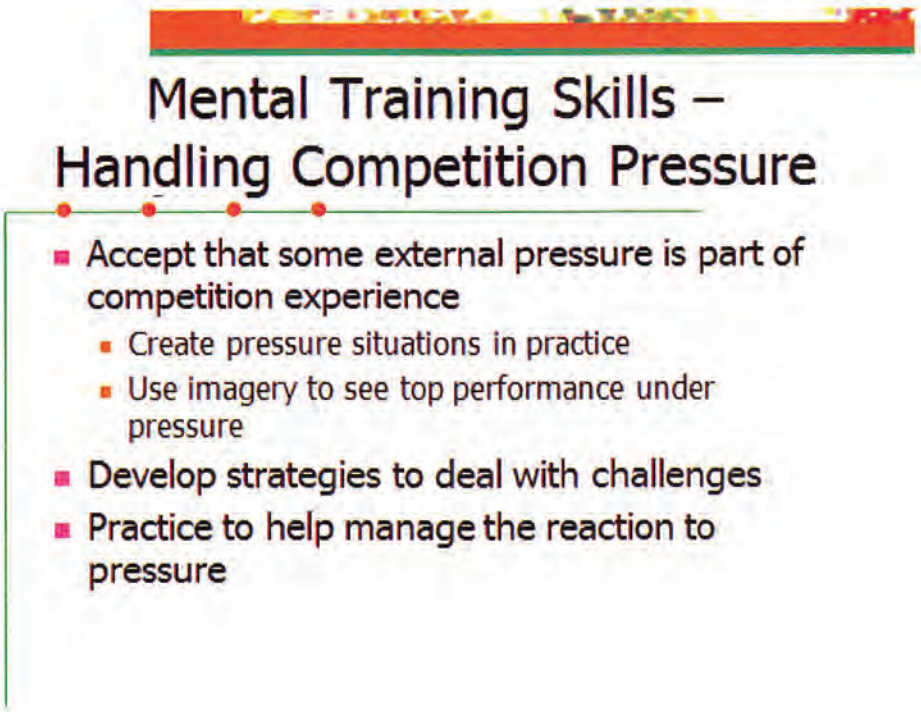
Unfortunately, a common occurrence in sport is the athlete who performs exceptionally well in practice – setting personal bests, even state or national records when the only pressure is that which they bring upon themselves – but, in competition, when it matters, these same athletes are often not able to perform up to their capabilities. What changes from practice to competition?

External Factors: Family/friends/media watching, other competitors, the scoreboard, indicating that "it counts," *etc.*

Internal Factors: Thoughts – Emotions – Behavior -- Physical Excitement. Is there anything they can do to maintain a high level of performance regardless of the situation?

As part of the preparation for competition athletes need to prepare for and learn to deal with these potential distracters. These distracters are often out of the athletes control in regards to eliminating or changing them or as to when they will pop up, but they can learn how to manage them. It can help the athletes if the competition environment (rules, distances etc.) is the same and that what matters most (what they need to do to perform well) remains the same from practice to the competition.

Think of it this way. Major competitions don't cause the athletes to respond and perform in a certain way. Instead, their thoughts, feelings and emotions about the competition are what really influence their response (behavior). Learning how to control these thoughts, feelings and emotions will improve their chance of performing up to their capability – handle the pressure – when it matters most.



Student Notes:

Athletes will need to train for these pressure situations.

Creating pressure in practice: Simulated competition is a good place to start. You may want to bring in judges, play a crowd noise tape, make small bets (like a quarter), conduct finals or guts matches, or give small prizes to the winner. The idea is to "inoculate" the athletes against some of these distracters.

Imagery: Realistic imagery – seeing the environment as it will be on competition day with all the distractions in place and seeing themselves handling the situation and performing well. For example a shooter may visualize shooting a 10 in a final with her heart racing and the gun barrel quivering. This takes practice to accomplish. In order to manage this pressure your athletes need to take responsibility for their own performance.

Awareness: How various pressures and distractions affect performance? A written log of competition experiences will help to identify what they felt and how they dealt with it after each competition.

Preparation: Prepare/modify strategies to deal with the situations.

Practice: Practice these strategies in training and integrate them into a pre-competition routine.

Stretching

20 sec - Touch Your Toes (feet together, slight bend in the knees)

20 sec each - Touch Your Right and Left Toes (with feet spread apart greater than shoulder width)

20 sec - Right and Left Hamstring Stretch (same leg same arm)

20 sec - Right and Left Lung (Back knee touches the ground)

20 sec - Butterfly Stretch (hands on feet, push your knees to the ground)

20 sec each - Arms

20 sec each - Arms

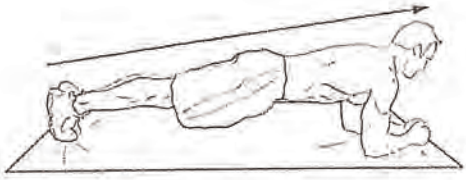
Hold each exercise for 20-30 seconds

Body Weight Exercises

5 Sit Ups

5 Push Ups

5 Body Weight Squats



Planks - 10 second on 10 seconds rest (repeat three times)

5 each - Lunges

5 Pushups (If the athlete <u>cannot</u> perform pushups with good form, have the athlete perform pushups with his/her knees on the ground until enough strength is built)

5 each side - Russian twist