National 4-H Shooting Sports
Quiz Bowl
Rifle Study Resources

These resources are for enrolled 4-H shooting sports members and coaches for their expressed use as study materials in preparation for the National 4-H Shooting Sports Quiz Bowl. They are not to be used to train a person or persons in the use, discharge, or handling of any firearms and archery equipment.

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Lesson 1 Narrative

Instructor note: The first part of the introduction must be customized to the site and any specific rules and regulations that apply to it. Good teaching and learning require that you create a positive, respectful and mutually supportive atmosphere. The range must be firmly and absolutely under the control of the range officer, but the atmosphere must be friendly and supportive. The introductory statement is your first opportunity to set that tone. Exercise great care in phrasing your comments.

As in all other shooting sports lessons, these may be combined into longer sessions if the situation dictates. The greatest concern in longer sessions is fatigue and lapses of attention. Be cautious and aware of young audiences.

Welcome to the first session on rifle shooting. Before we begin today's program, we need to introduce ourselves and become familiar with this facility. Introduce yourself and any other instructors, teen leaders or sponsors. If time permits, have the kids and their parents introduce themselves as well. Note the locations of food and drinks, bathroom facilities and any off-limit areas. Note the time schedule you will be following, too. If an indoor range is being used, stress that no food or drink will be allowed on the range – to avoid ingesting air-borne lead. Shooters must wash their hands and face before eating or drinking any time they handle lead pellets or fire any powder burning rifle.

Rifle shooting is a very safe sport, but it is only as safe as the people participating in it. Because of this, we will be teaching discipline, range control commands and range courtesy as we teach the other elements of rifle shooting. Since each person has only one set of eyes and ears, we will require that everyone on the range wear eye and ear protection during live firing. Tempered eye glasses, safety glasses or shooting glasses may be worn to protect the eyes. Foams plugs, custom fitted plugs or ear muffs may be worn to protect the ears. Shooting safety is mostly common sense and personal responsibility. Those characteristics are usually linked to adult behavior. During these sessions, we will treat you like adults and expect you to act in an adult manner on the range. No abusive, disruptive or foolish behavior will be tolerated. One instance of such behavior will result in the person being removed from the range for that session.

Repeated problems may result in the person being banned from the program. When more than one shooter is shooting on a firing line, some means of control is essential. We will be using a range officer and range commands to control our shooting. All rifles are to be made safe (empty, action open and open bolt indicator inserted) and grounded (placed on the shooting mat) until the range officer gives the command to make ready. Once the make-ready period is completed, the range officer will call "Ready on the firing line? Please respond by firing point number?" Each shooter or coach should respond by stating "ready" or "not ready" and the firing point number. This increases involvement and provides better control of the firing line in the early stages of instruction.

As the shooters become more experienced, this command may be replaced by a more traditional series of commands. "Ready on the right? Ready on the left? Ready on the firing line?" Appropriate pauses follow each one as the range officer watches for responses. Any shooter not ready should raise a hand and call out "not ready." When the range officer has determined that the range is safe and ready, he or she will state "the line is ready." The next command will be "commence firing." In competitions, the range office may state the time limit for shooters to complete that stage of the competition. At the end of the stage or at any time when an unsafe condition develops, the range officer will call "cease fire." At that command the shooters must immediately stop shooting, unload and open their rifles and place them on the bench or shooting mat with the action exposed and the muzzle pointing down range. Anyone may call cease fire if they see an unsafe situation. If the stage is completed, the rifle is made safe and grounded. After doing so, the shooter steps back one step from the firing line and waits for further instruction from the range officer. The purpose of a firing line is to keep all shooters in a line. Should shooters drift back from the line or move beyond it, an unsafe situation might develop. For that reason, everyone on the range should make active shooters stay on the firing line during a shooting session.

There are 10 Commandments of Shooting Safety. For our purposes, we will stick with three cardinal rules.

6. *Always* keep the **muzzle** pointed in a safe direction. That means point it straight up while carrying it into the range area and down range from that point on. It is vitally important to *always* watch where the muzzle is pointed.
7. Keep the **action** open with the open bolt indicator installed until the range officer has declared the range ready and the firearm is loaded for shooting.
8. Keep fingers off the **trigger** until ready to fire.

Following these three simple rules and using a little common sense and courtesy can keep the firing line safe for all shooters.

Eye Dominance

Learning to shoot well is much easier when the shooter uses their dominant eye for sighting. Nearly everyone has a dominant eye, just as they have a dominant hand and a dominant foot. Select a partner and stand squarely facing that partner two to three arm-lengths apart. One member of each pair needs to be an observer. The other member will be the "shooter." Shooters should extend their arms forward with the hands in front of the waist and place one thumb on top of the other one. Keeping the thumbs in place, cross the fingers of the top hand over the fingers of the bottom hand to form a small triangle. Now, with both eyes open, extend the arms to eye height and look at the observer's nose through the opening. The observer should note which eye they see looking back through the triangular opening. Then, keeping the nose centered in the opening, the shooter should slowly bring the hands back to his or her face. The opening will come to the dominant eye. The observer should watch for switching between the eyes as the hands move toward the face. The shooter should stand square to the observer without leaning, canting the head or squinting one eye. Try it a couple times to confirm your observation, then switch roles and repeat the process.

How many of you came to your left eye? Right eye? You should shoot with the dominant eye, regardless of whether it is on the same side as your dominant hand. Using the dominant eye reduces tension and eye fatigue and helps in seeing the target clearly and quickly. Keeping both eyes open increases depth perception as well. Those whose eye and hand dominance is on opposite sides are cross- dominant. You should shoot from the dominant eye side, even though it feels clumsy and uncomfortable. Your hands and feet are much easier to train than your eyes. Even if you are already shooting from the "off-eye" side, you will improve more rapidly by switching to the dominant side. A few people are ambidextrous. A similar number are ambi-eyed, that is, their eyes switch dominance when an obstacle is placed in front of them. Shooters with this situation can use a shield, a spot on their shooting glasses or some similar barrier to assure the same eye is used every time they shoot. Even persons with a specific eye dominance may find a barrier device helpful. Be sure you remember which eye is your dominant one so you can use that side in your shooting.

First Shot Fundamentals – Firing the First Shot

The youth who participate in 4-H shooting sports sign up for the project because they want to shoot. The first shot fundamentals concept is designed to allow them to safely fire some introductory rounds so their curiosity can be satisfied and so they will return for the next lessons. The steps in executing the first shot fundamentals can be found on page 6, item III. First Shot Fundamentals. Prior to the session, the range should be set up so the participants will be firing from a bench rest, seated position. Blank sheets of paper should be posted as targets or targets with the backside facing the shooter and the bullseye facing the target frame (target backs). At this stage, we are not concerned with accuracy but simply having them safely fire their first shots. Have the rifles in a rack with open bolt indicators installed. Ammunition must be at a secure point and not on the firing line.

Now that the shooters have determined their dominant eye, provide them with a brief explanation of the rifle parts and rifle sights, and sight alignment (listed below). A detailed explanation of the rifle parts can be provided after firing the first shots.

Safety is the priority. You must have an experienced assistant instructor at each firing point assisting first time shooters and a range master overseeing the operation of the range. Insure all shooters have their eye/ear protection. The range master gives the firing line commands. Give the command "shooters to the line". Once the shooters are seated, have the assistant instructors bring the rifles to shooters at the bench and demonstrate how the rifles operate while keeping the muzzles pointed downrange. Assistant instructors now allow the shooters to operate the rifles, sight downrange, and dry practice squeezing the trigger.

Once the familiarization period is complete, give the command, "Is the line ready? Respond by firing point number." If all shooters and assistant instructors are ready, give the command, "The line is ready." At this time have the assistant instructors pick up five rounds of ammunition from the secure ammunition point and take it to the firing line. Give the command "Make ready." The assistant instructor may load the rifle. Give the command, "Commence fire." When shooting is complete, give the commands "Cease fire" and "Make the line safe." The assistant instructor insures the rifle is empty and inserts the open bolt indicator. The range master confirms that all rifles are made safe and has the assistant instructor return the rifles to the racks.

When all shooters have fired at least five familiarization rounds, they wash their hands to remove all lead particles and return to the class room for more instruction.

Orientation to the Rifle

Rifles, like many other firearms, are composed of three basic elements: a **stock,** an **action** and **a barrel.** These parts work together to make a functioning rifle. The stock functions as a grip or control element and also helps to direct and distribute **recoil** energy. The **forend** or **forearm** is supported by the non- dominant hand (dominance is always related to the eyes). The **forend** provides support for the **barrel** and aids in directing it toward the target. The grip (wrist, small or pistol grip) provides a secure surface for the dominant hand and helps to locate and position the trigger finger.

The remainder of the **butt stock** serves several functions. The comb supports the face and helps to align the eye with the sights. The butt supports the rifle on the shoulder and helps to distribute the recoil energy. In general, the stock helps to position the rifle relative to the shooter and to place its other parts in a location where they can be conveniently used.

The action contains the operating parts of the rifle – those parts that cock, load and fire it. The **bolt** or **breech block** may be involved in cocking the trigger mechanism, but its main function is to lock the cartridge in place and to firmly support its base or head. The **trigger** is a lever that releases the firing mechanism, causing the rifle to fire. In powder-burning rifles, the trigger releases a firing pin or hammer that strikes a primer, setting off the chemical part of the shooting process. In air guns, it releases the air charge to drive the projectile. The **safety mechanism** is another obvious and important part of the action. It is a mechanical device. Like other mechanical devices it can fail or break. The shooter should learn to use the safety only in addition to proper and safe firearm handling. Some safeties block the operation of the trigger. Others may lock the firing pin in place. Still others may lock all parts of the action. However, the only truly adequate

Safety is the one behind the bolt – the shooter. Keeping the firearm pointed in a safe direction at all times prevents accidents.

The barrel is a launching tube for the projectile. It is designed to contain the great pressures generated when a rifle is fired. On the action end of the barrel, a specially shaped opening, called the **chamber**, is designed to fit a specific cartridge. It supports the cartridge firmly and allows the case to seal the chamber when the arm is fired. The opposite end is the muzzle. It is the spot where the bullet exits, and it points toward the impact point of the projectile. The cylindrical hole between the chamber and the muzzle is the **bore.** It has a diameter specific to the chambering, which permits the bullet to seal the bore while still being able to pass through it. The rifle bore has spiral set of ridges (lands) and grooves (rifling). These lands and grooves cause the bullet to spin, giving it greater stability in flight.

The barrel is fitted with sights. They are reference points that align the eye with the bore so that the shooter looks where the bullet is going. Once the sights are aligned with the barrel, the entire unit may be moved to point the barrel at the intended point of impact. Many different types of sights exist, but all of them serve the same purpose.

Types of Rifle Sights

Rifle sights may be divided into metallic sights and optical sights. Metallic sights can be further divided into **open sights,** those with metal only at the bottom and perhaps sides, and **receiver** or **peep sights,** which use a hole or aperture as an aiming point.

Open sights come in a wide variety of designs, but they can be grouped into three basic categories. **Patridge-style sights** have a square notch and flat top on the rear sight and a rectangular post or blade as a front sight. The sights are aligned by centering the post in the rear notch and aligning the top of the post with the top surface of the rear sight. **Notch or V-sights** feature a V-groove with or without a notch in the center. The front sight is usually a bead or ball on a thin post. They are aligned by placing the full ball or bead in the notch or at the base of the V- groove. **Buckhorn sights** are similar to notch sights, but they carry extended "horns" up the sides of the sighting area.

The table below shows which direction the sight knobs must be turned to move to a shot.

	Clockwise	Counter clockwise
Elevation Knob	Up	Down
Windage Knob	Right	Left

Receiver or peep sights have a relatively small aperture or hole in a disk as a rear sight. The shooter looks through the hole to the front sight, which may be a post, a bead or ball on a post or another aperture. The front sight is simply centered in the opening to align the sights. Receiver sights are more accurate and quicker to use after a little practice than open sights.

Optical sights come in several varieties. Aim-point devices superimpose an electrically generated aiming dot on the target. While they are popular with some pistol shooters, relatively few are used by rifle shooters. **Laser sights** project an aiming dot onto the target. Although they are used by some police and military agencies, the shooting public rarely uses them. Most shooters use a **telescopic sight** when they elect to shoot with an

optical sight. The lenses tend to put the target and the reticle (the aiming device) on a common focal plane, so the shooter can see both of them more clearly. These sights may or may not magnify the target. They eliminate the need for sight alignment and provide more precise aiming than other types of sights. A wide variety of reticles are available in telescopic sights. The most common reticle is a cross-hair or cross-wire design, where the intersection of the stadia wires is the aiming point. Some shooters prefer one or more posts, either flat topped or tapered. Others prefer a dot suspended on extremely fine cross hairs. The duplex style is also popular, where relatively fine tapered posts or coarse tapered cross hairs become a fine set of cross hairs in the center of the scope. Some sights have multiple stadia wires that can be used as a range finder. Each of these reticles has advantages but the duplex, cross hair, dot and post are the most commonly seen.

Sight selection must consider several factors. The rules of the match may restrict the selection. Many matches, for example, stipulate that only metallic sights can be used. The shooter's vision may influence the type of sight that can be used effectively. The purpose for which the sight and the rifle will be used strongly influences the type of sight selected. Expense is also a significant factor. Generally open sights are provided with rifles and are the cheapest. High quality receiver sights and optical sights are much more expensive.

For precision shooting, most shooters rely on either good receiver sights or telescopic sights (when permitted by the rules). Position shooters usually use metallic sights, while light rifle, silhouette or bench-rest shooters usually rely on optical sights. Hunters usually elect telescopic sights or receiver sights, although large numbers of hunters who take their game at close ranges use open sights. Some special hunts, like primitive hunts, require open sights. For **plinking** and fun shooting, any sight that will let you shoot up to your standard of accuracy is fine.

Shooting Journal

Record keeping is an important part of 4-H club work and many of you already maintain a project record book. Shooters also keep records in what is called a shooting journal. Shooters record such things as sight adjustments, target scores, equipment maintenance, etc. You should prepare a notebook that you can use as your journal for this project.

Summary

We have learned about the facilities we will be using and about the basic rules and regulations for using them. We have also learned the three cardinal rules to help keep our shooting safe.

1. We will keep our **muzzles** pointed in a safe direction.
2. We will keep the **action** open and the rifle empty except when actually shooting as directed by the range officer.
3. We will keep our fingers off the **trigger** except when actually firing under the direction of the range officer.

All rules of safe firearms handling apply, but these form the foundation for the target shooter.

We explored the structure of rifles and learned the form and function of the stock, action and barrel. In addition to the parts and functions, we looked at several types of sights and discussed sight selection. We determined our eye dominance and learned why it is important to shoot with the dominant eye. We also discussed some of the ways to ensure that the dominant eye is used in sighting. We fired our first familiarization rounds. Next time we will be using the rifles in a dry-firing exercise on the range.

Summary Activities

1. Have parents or teen leaders go through a range exercise making some deliberate errors in firearms handling. Have participants comment on their mistakes and state what they should have done to handle the firearms properly. Divide into two teams and play an identification game. Show a picture or describe a function of a rifle part. Alternate between teams and make sure each member takes a turn in identifying the parts and/or their functions.

2. Have participants check the eye dominance of their parents or other family members.

Sharing and Exhibit Ideas

1. Diagram and label a rifle and its functional parts in your shooting journal or notebook, or make a poster to illustrate the parts and function of a rifle.
2. Develop a set of posters or signs that reinforce the rules of safe firearms handling on the range.
3. Study a reference on firearms to determine how they work. Study the parts of the firearm more completely. Share your information with other members of your club.
4. Develop a set of firearms safety posters that can be used in teaching the introductory lesson in rifle shooting.

Lesson 2 Narrative

In the last session, we discussed the facilities and the basic rules for using them. We reviewed the basic rules for shooting safety on the range and emphasized three of them: **muzzle** pointed in a safe direction, **actions** open and empty and finger off the **trigger**. We noted that both eye and ear protection are essential for all persons on the range. Some situations with air rifles may require ear protection, but not all. We discussed the parts of the rifle and how they work. We checked our eye dominance, and we discussed sights and how they operate. In this session, we will be dry firing to practice sight alignment and trigger control.

Sight Alignment

Sights are reference points that aid in aligning the shooter's eye to the bore of the rifle. Once the bore and the eye are aligned, the bore can be pointed at a desired point of impact. With **metallic sights,** the shooter focuses on the front sight. The front sight is then positioned properly in the rear sight, keeping the front sight in sharp focus and allowing both the rear sight and the target to be slightly blurry.

Sight alignment differs with the various types of sights. With **telescopic sights** (scopes), the lenses inside the sight align the sighting device or reticle with the bore. The target and the **reticle** appear on the same focal plane, so both of them are in sharp focus at the same time. Adjusting the sight setting changes the relationship with the bore, but on most modern scope sights, the reticle remains centered. **Receiver** or **peep sights** are aligned almost automatically by the eye. As the front sight is viewed through the rear aperture, the eye tends to center the front bead or post in the aperture. When a front aperture is used, the eye tends to center the inner aperture in the outer (rear) one. Concentration on the front sight is somewhat automatic, since the rear sight is too close to the eye to remain in focus.

Open sights are properly aligned when the front sight is centered in the notch or V-groove. Partridge-style sights center the front blade in the notch and level the top of the blade with the top of the rear sight. Other styles center the bead in the notch or groove in the rear sight. More concentration may be required to focus on the front sight with the multiple images of an open sight and a target.

No matter what type of sight is used, proper sight alignment is critical to accurate shooting. Improperly aligned sights will not even allow the shooter to adjust sights to the barrel adequately. Practicing sight alignment can lead to improved shooting and tighter groups.

Trigger Control

Trigger control simply means learning to press the trigger directly to the rear in a smooth motion with constant pressure and without disturbing the sight alignment or sight picture. While many shooters suggest squeezing the trigger, that idea sometimes prompts shooters to apply pressure with the entire hand. Such pressure almost invariably disturbs the sight alignment. Proper trigger control requires that the only change in hand pressure be the straight-back push of the trigger finger on the trigger. Adjusting the trigger finger placement on the trigger can aid in achieving a straight-back pressure. Pistol shooting demands good trigger control and is excellent practice for good rifle shooting.

Proper trigger control can be demonstrated and practiced with an exercise using an eye dropper. With the eye dropper filled and held between the thumb and the tip of the index (trigger) finger, press gently with the finger to drop several drops, one at a time, on the same "target." Then try by squeezing with the whole hand or moving both the thumb and the finger at the same time. You will see that the first method is

more precise. Try holding the entire hand still while moving only the trigger finger. As you overcome the tendency to move the entire hand, your ability to maintain sight alignment will increase.

Range Commands and Procedures

The first rule of range etiquette and safety is that the range officer is in complete and absolute control of the range at all times. Safety is our constant and primary concern, and the range officer's first priority is to maintain range safety. Everyone on or near the range is personally responsible for safety as well. To protect sight and hearing, eye and ear protection is required of all persons on or near the range. In addition, no nonsense, disruptive activity or abusive behavior will be permitted on or near the range. Shooters, particularly beginning shooters, need to concentrate on safety and the fundamentals of proper shooting. Distractions reduce concentration, hinder learning and create potentially dangerous situations. They cannot and will not be permitted. Participants who fail to exercise good judgment and the highest standards of behavior will be removed from the shooting range for the duration of that session. Repeated problems may result in being banned from the entire instruction program.

Three simple and basic rules apply to firearms handling to help keep the operation of the shooting range accident free. First, **muzzles** will always be kept pointed in a safe direction. They should be held straight up when the rifle is being brought into the range and pointed down-range at all times when it is on the firing line. The shooter (and coach) must watch muzzle direction at all times. Second, the rifle will be kept empty with the **action** open and exposed to view at all times except when it is actually being fired. Range officers or their assistants will inspect every rifle when it is brought onto the range or removed from it. The action should be open at that time for their inspection. Third, the finger will remain off the **trigger** except when the shooter is in the act of firing, either dry firing or with live ammunition.

If a problem arises while shooters are on the range, a shooter must decide what to do. If any unsafe condition is present down range, the shooter should call "cease fire" immediately. If a malfunction or equipment problem occurs a shooter should raise his or her hand to signal the range officer or an assistant. The rifle must remain pointed down-range at all times. Keeping the rifle pointed down range is particularly important if an ammunition malfunction or misfire occurs. The rifle should remain pointed down range for at least three minutes before the action is opened. Faulty ammunition should be placed in the barrels provided for proper disposal. We will use range commands consistently, and shooters and coaches are expected to learn them. The following are basic commands, you may add to these as the situation dictates, e.g., large groups of shooters, matches, etc. or use the Expanded Range Commands (below) when working with novices, but always use these Basic Range Commands as a minimum standard.

BASIC RANGE COMMANDS

"Shooters to the line" instructs shooters to move to the firing line. *"Load"* allows shooters to handle their rifles and load them. *"Commence firing"* signifies that live firing may begin.

"Cease firing" signifies that all firing stops and rifles must be unloaded or it signifies an unsafe situation where all firing stops and rifle actions are opened.

EXPANDED RANGE COMMANDS

"Shooters (or relay [number] to the line" instructs shooters (or coach-pupil pairs) to move to the line with their equipment. All equipment should be made safe, inspected and grounded at the shooting line. The muzzle must be pointed down range and the action must be open and exposed to view.

"Is the line ready? Please respond by firing point number. "This query demands a response, either positive or negative, from every shooter or coach. After shooters gain more experience and confidence with range procedures, we will switch to a more conventional response. Then only shooters who are not ready will reply many shooters signify their readiness with a wave of the hand. Anyone who is not ready at this point should respond with a "not ready."

Once the range officer is satisfied that the line is ready, he or she will declare *"the line is ready"*. *"You may handle your firearms,* " or *"The preparation period begins now"* allows shooters to handle their rifles. The rifles may be picked up and adjusted to the shooter at this command, but they MAY NOT be loaded. Preparing to load the rifle comes after the range officer declares the preparation period at an end. The range officer will state the readiness of the range, then declare it open by stating, "*Ready on the right. Ready on the left. Ready on the firing line* "This is the final opportunity to indicate that more time is needed.

Mechanical safeties are seldom used by serious target shooters, since the rifle is loaded only in preparation to being fired. To reinforce use of the safety and to add another safety checkpoint to our shooting procedure, we will keep the safety on except when the rifle is ready to fire. The range officer will issue the command *"Safeties off"* to move the safety to the fire position.
"Commence firing" signifies that live firing may begin. The rifle may now be loaded and fired. In competitions, the range officer will usually state the time allowed for the stage just prior to declaring the range open to live firing. Initially, the range officer will issue a series of commands to control actions on the range further. *"Load"* means the rifle may be loaded and charged if necessary. *"Align the sights,"* means to obtain a proper sight picture. *"Obtain a sight picture"* means to hold the sights on the target. *"Press the trigger,"* means to fire a controlled shot at the target. *"Follow through,"* means to hold the sight alignment and sight picture through the shot. These extra commands will be eliminated after the shooters are familiar with the firing sequence.
"Cease fire. May signify either the end of a time period for a stage or the presence of an unsafe condition. It means that all shooting is to stop *immediately.* Even a shot that is just about to "break" should be held back if it is possible to do so. At that command, all shooters and coaches repeat the command out loud, all shooting stops, and the action is opened, and any live ammunition is removed from the firearm. *"Make your rifles safe"* requires you to double-check the rifle to be sure that it is empty and the action is open. Insert the open bolt indicator. Some range officers will then tell you to *"Ground your rifles.* This means place them on the shooting mat pointing down range with the action open and exposed to view. Just as rifles are the first part of the equipment carried onto the range and checked as they enter, they are removed from the range first at the end of a relay. Rifles should be ready for inspection as they are being taken from the range, just as they were when being carried onto the range.

Rifle Operation

We learned the basic parts of a rifle and how they work in the last session. Each shooter should be completely familiar with the operation of his or her rifle. Study the owner's manual carefully or have someone who understands the rifle demonstrate its features for you.

Please pay close attention to the teen leaders as they demonstrate some basics of rifle operations. The safety is located on the trigger guard, or behind the bolt handle on the receiver, or on the rear of the bolt, or on the receiver tang. Most safeties located on the tang or the receiver are pushed forward to the fire position. Those mounted on the rear of the bolt are usually rotated to the right to fire. Cross- bolt safeties, found on the trigger guard, come in both right-handed and left- handed versions. They are pushed away from the dominant hand to fire. Study the safety on your rifle, and examine how it operates with the assistance of a teen leader or assistant. The basics of loading and unloading are also extremely important. We will be single loading our projectiles. Each pellet or cartridge is placed in the rear of the chamber and locked into place by moving the bolt forward. In many bolt-action rifles, the bolt is also rotated after it is closed to lock it in place. Practice the procedure without using any ammunition. In the beginning, the "coach" in each coach-pupil pair will be controlling all ammunition.

Muzzle control is critical in all phases of using a firearm. The shooter is responsible to watch where the muzzle is pointing at all times. "Coaches" should reinforce proper muzzle control, stopping the movement of the rifle if necessary. Range staff will watch each firing point in the beginning to support both the coach and the shooter. Air rifles have an additional safety concern. They must be charged with air before they can be fired. The rifles we are using require a single air charge. The operating handle is moved fully forward, then is pulled back and locked in place. Be sure to keep the muzzle pointed in a safe direction throughout the process. Also, keep your fingers clear of the charging lever while it is being moved. On many air guns the charging lever closes by snapping sharply into place. They can give you a nasty pinch if you are not careful.

Coach-pupil Instruction

The coach-pupil method involves pairs of shooters who change roles during the course of instruction. The "coach" reinforces proper technique, learns by instructing and supports the shooter. Coaches watch for compliance with all safety measures. They observe muzzle control and intervene if the muzzle strays from a down-range orientation. Coaches assist the shooter in getting the rifle properly placed on the bench or the shoulder. They control the ammunition and load the rifle in the beginning stages of learning. They also move the safety to the "fire" or "off" position and announce the condition to the shooters. Later, they may assist the shooter with loading. An adult or teen assistant will be available to support each coach-pupilpair.

Dry Firing

Dry firing is a valuable and inexpensive way to practice rifle shooting form. It is simply going through all the motions of shooting without ammunition. The shooter is free from worrying about scores and the noise of live firing, allowing greater concentration on the fundamentals of shooting. Dry firing helps to develop a feel for the trigger. No noise or recoil will disturb the process of developing a smooth trigger squeeze. Faulty trigger control can be detected because the movement is not covered by recoil. The shooter can experiment with finger placement on the trigger to achieve a straight-back pressure. Dry firing also helps the shooter develop consistent form, sight alignment, sight picture and follow through.

Air rifles may be dry fired merely by shooting without loading a pellet. Most air pneumatic air rifles may be dry fired without causing damage to the rifle. Since dry firing can severely damage spring-piston air rifles, always check with a competent authority to determine if the rifle you are using may be dry fired without damaging it. Rimfire and center-fire rifles may use snap caps or dummy rounds to cushion the firing pin.

Dry Firing at Target Backs

Initial dry firing and live firing will involve target backs rather than regular targets. Shooting at target backs emphasizes shooting groups and shooting form rather than hit location or scores. Thus, the blank target is a better learning environment for the shooter. The shooter should concentrate on proper and consistent sight alignment and good trigger control. Coaches should watch muzzle control and other safety elements. They should also help shooters concentrate on focusing on the front sight, trigger control and following through the shot.

All shooters should start from a supported, bench-rest position. The shooter is seated squarely to the target behind the bench. The rifle is supported under both the forend and the grip by sandbags, a cradle, a commercial rifle rest or similar supporting materials. The shooter's elbows rest on the bench. The dominant-side hand (shooting hand) holds the grip of the rifle, with the finger along the trigger guard. The "off" hand lies on the bench, braces the elbow of the shooting hand or braces the sandbag under the grip. The cheek rests on the comb with the dominant eye in line with the sights. The sights are moved to the desired point of impact by moving the rest and the rifle, not by muscling the rifle into position. The rifle should be stable. For the duration of the dry-firing exercise, the rifles should be empty or loaded with inert ammunition. No live ammunition should be present.

The first "shot" for each shooter will be fired on command. With the first relay on the line, have the shooter get into a good bench-rest position with the aid of the coach. After a few moments, determine the shooters' status by asking *"Is the line ready? Respond by firing point number, please* ". Each shooter or coach should reply by stating the number of their firing point and either "ready" or “not ready" Query any non- responders directly by number or name. . Once they are in position and settled (adults or teen assistants may need to help here), have the shooters insure their safeties are on and have the coaches remove the open bolt indicators." On the command *"coaches, cock your rifles*" coaches should cock their rifles and charge them with air if necessary. The coach switches the safety to *"fire"* on the command *"safeties off*" Shooters should get into position again and *"align the sights*" Caution shooters to align the sights properly and carefully. The *"center the sights on the target back"* command may require adjusting the rifle or rest positioning. *"Keep the front sight in focus, or press the trigger and follow through"* should result in a ragged series of reports or clicks. Next, issue the command *"safeties on.*" Coaches should verify the safety position.

Then command *"make your rifles safe*" Shooters should open the action, insert the open bolt indicator leaving the muzzle pointed down range and the rifle supported in the bench-rest position. This sequence should be repeated several times before the shooter and coach switch roles. Repeat the dry firing exercise several times with each shooter. Watch for lack of attention, signs of boredom or confusion.

Summary

Proper sight alignment involves focusing the eyes on the front sight and centering it in the rear aperture, or in another pattern appropriate to the type of sight. Aperture and telescopic sights are preferred for this stage of instruction. Proper trigger control involves pressing the trigger until it "breaks," releasing the sear or firing the rifle without disturbing the sight alignment. That undisturbed sight alignment should be maintained during and after the firing with a solid follow through for the shot. We applied these principles by dry firing at target backs from a bench-rest position.

In addition to these mechanics, we have learned and practiced safe range management and operation procedures. Those procedures and commands have been practiced in a dry firing context. You have learned that dry firing is an excellent way to practice the fundamentals of shooting.

Remember that we will be shooting live ammunition in our next session. No one will be allowed to shoot without proper eye and ear protection, so be sure to bring it with you to the meeting.

Summary Activities

1. Have participants discuss the main points of the session (self- control, sight alignment and trigger control) and the reasons that they are important to good shooting.
2. Have participants record what they learned about sight alignment, trigger control and range operations in their shooting journal or notebook.
3. Have a more experienced shooter discuss why these basic elements of shooting are important to them and how they practice them. Emphasize mental control and dry firing.

Sharing and Exhibit Ideas

1. Exhibit your shooting journal or notebook, showing the learning steps you have recorded during this series of lessons.
2. Develop a demonstration of a sight alignment exercise, and explain why sight alignment is important to good shooting.
3. Make a set of safety posters or signs for the ready area at the entrance of the shooting range, reminding shooters of their responsibilities on the range.
4. Build a shooting bench.
5. Make a set of sandbags to be used in bench-rest shooting.
6. Discuss shooting safety and proper shooting form with one or more friends.

Lesson 3 Narrative

Rifle shooting involves only a few factors that are important to accurate and safe shooting. Self-control is required for both purposes. That includes the ability to concentrate on the task at hand as well as complete awareness of potential dangers. There is no room for any foolishness or horse-play.

What are the three primary rules of safe shooting on the range? The most important is keeping the muzzle pointed in a safe direction at all times. In addition, keep the action open, the firearm empty and the open action exposed to view at all times. Finally, never put your finger on the trigger until in the act of shooting.

Sight alignment is lining up the eye with the bore by placing the front and rear sights in a consistent visual relationship. Proper sight alignment with these receiver sights involves centering the front sight precisely in the rear aperture. The front sight remains in focus throughout the shooting process.

Trigger control is firing the rifle without changing the sight alignment during the process. The trigger is pressed straight back until it breaks" or releases the sear to fire the rifle. During and after the shot the shooter tries to keep the sights aligned and on target.

One of the ways to ensure safety on the range is to have one person in charge. The range officer is in absolute control of the range. We use a standard set of commands to control actions on the range.

That helps us avoid confusion.

The most important command issued is "cease fire!" It brings all shooting to a complete and immediate halt. All other actions on the range follow the direction of the range officer as well. The commands we will be using include the following.

"Relay [number] or *shooters to the line."*

Shooter-coach pairs move to the firing line with their equipment and make all equipment safe.

"Is the line ready? Respond by firing point number, please."

Shooter or coach must respond either "ready" or "not ready."

"Pick up your rifles."

Shooters may pick up their rifles, verify that they are safe, check to be sure the safety is on and get into shooting position without loading the rifle.

"Load your rifle."

The coach will load and charge the rifle and return it to the using the proper protocols.

Shooter

"Safeties off."

The coach will switch the safety to the "fire" position.

"Assume a comfortable firing position."

The coach will assist the shooter into a sound bench-rest position.

"Align your sights."

Shooters will focus on the front sight and align the rear sight with it.

"Center your sights on the target back."

Shooters will bring the aligned sights to bear on the center of the blank target.

"Press or squeeze the trigger."

Shooters will fire their rifles, keeping the sights aligned throughout the shooting sequence.

"Make your rifle safe."

Shooters will open the action, clear any ammunition, place the safety in the "safe" position and ground the rifle on the bench with the action up and the muzzle pointing down range.

Dry Firing Review

Prior to live firing, let's review the dry-firing process. The first relay of coach-pupil pairs move to the line. Once the line is ready, each shooter should cock the rifle, point it down range and squeeze the trigger to re- establish the trigger feel. Next, dry fire a round or two with the sights aligned on the backstop. Then, align the sights, center them on the blank target and dry fire another round or two. Reverse roles so both members of the team get a chance to warm up by dry firing.

Live Firing at Target Backs

Live firing involves firing a projectile at a target. The projectile leaves evidence of the point of impact, which allows the shooter to see where the bore was pointed when the rifle was fired. If the sights were properly aligned, the eye and the bore should have been looking at the same point of impact. We are not concerned with the point of impact as much as with the consistency (precision) of that point of impact. The size of the group gives evidence of consistency in form and hold. As long as it is on the paper, the location is notimportant.

Each action type has a specific loading procedure. We will be using bolt action, single stroke, and pneumatic air rifles for this exercise. *[Instructor note:* modify this to fit the type of rifle you will be using.] The rifle is loaded by pulling the bolt handle back toward the butt of the rifle. That cocks the rifle and opens the action to permit a pellet to be loaded through the loading port. Place the trigger safety in the “on” position by pushing the safety button from the left to right so that no red is showing. The rifle is charged by grasping the charging lever and moving it forward as far as it will go. With the fingers, out of the way, the lever is then drawn back and locked in place. The lever may close with a snap, so avoid getting your fingers pinched. The pellet is inserted in the port with its skirt (the hollow base portion) facing toward the rear and the closed end toward the muzzle. Pushing bolt forward locks the action.

Does anyone have any questions on how to cock, load or charge the rifle?

Follow these teen leaders as they demonstrate the five-firing sequence. Note that they follow the range officer's commands and keep the muzzle under control at all times. Once the range officer has declared the range hot or ready for live firing, the shooter opens the bolt and moves the safety to the “on” position. Then the rifle is charged with air by making one complete stroke with the charging lever. Throughout this operation, note that the muzzle is pointing down range and the trigger finger is kept off the trigger. The shooter then takes a comfortable bench- rest position. The rifle is now loaded and the bolt is closed. The safety is pushed to the "fire" position. Then the sights are aligned and held on the center of the target back in front of that firing point. The shooter squeezes the trigger until the rifle fires, keeping the sights aligned and centered on the target back. Note that the rifle held its position until after the pellet hit the backstop. Then the rifle is made safe by opening the action and placing it, action up, on the bench with the muzzle pointing toward the backstop.

Live Firing at Target Backs

You will note that none of the targets on the backstops have any bullseyes on them. You are shooting at the backs of the targets to check sight alignment and trigger control. If both are being used properly, and you are holding the aligned system on the middle of the target back, you should be able to shoot relatively small groups. The objective is to shoot groups. We are trying to avoid confusion by keeping you from worrying about your score.

Coaches, remember that your job is to watch for proper shooting form and safety at all times. Remember that we must always keep the muzzle pointed down range. The shooter needs to focus on the front sight, align the sights and control the trigger to shoot good groups. We will shoot the first shot in each relay on command.

"Shooters to the line."

"Is the line ready? Respond by firing point number, please." “Pick up your rifles."

"Safeties on."

"Coaches, charge rifles with air and load."

"Hand the rifles to your shooters." *"Safeties off."*

"Focus on the front sight and align the sights."

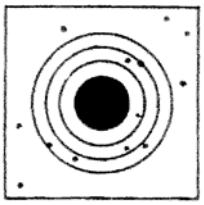
"Center the sights on the target back, keeping the front sight in focus." *"Squeeze the trigger, keeping the sights aligned and centered on the target back until the pellet hits the backstop.*"

"Make your rifles safe by putting the safety on, opening the action and placing the rifle on the bench with the action exposed to view."

"Coaches, you may continue to load and let your shooter fire several more rounds."

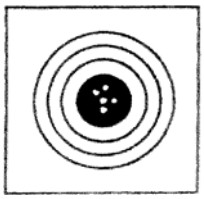
Once the first shooter in the team has had a chance to fire three to ten rounds, the team members should reverse roles and repeat the entire sequence. If other relays are waiting, have this relay evaluate what they learned and review shooting procedures while the others shoot. If no other relay is waiting, continue the firing process, reversing roles after every five to ten shots. Watch for fatigue and try to take breaks before it becomes a problem.

Shooting a Group for Analysis



Now that we have all had a chance to shoot at a target back, let's put up fresh targets and shoot a series of five shots to see how tight a group you can shoot. Remember to keep the same point of aim on the center of the target back regardless of where the shots are hitting. The size of the group will depend upon your consistency. Consistent sight alignment with a consistent trigger squeeze and a consistent sight picture on the target back will give you the smallest possible group. Go ahead and shoot five shots at your target, trying to do your best.

Retrieve your targets, and bring them to your instructor. Small groups indicate that you have mastered the basics of firing a shot adequately to go on to the next step. Instructors, if necessary use the triangulation exercise to evaluate sight alignment or the trigger control exercise with your shooters who are shooting large groups. (An explanation of how to do the triangulation exercise can be found in the narrative of Lesson 4 *Teaching Sight Picture.*) Remember that the location of the group is not important. Only its size is important right now.



Summary

What have we learned today? It is much easier to hit the same hole every time when we dry fire than when we are actually shooting projectiles down range. Tight groups are the result of consistent sight alignment, consistent trigger control and a consistent hold on the target. These few fundamentals can help you shoot small groups. Small groups make it possible to adjust the sights so the sights and the bore are pointed at the same location. Be sure to write the things you have learned in your shooting journal or notebook.

Summary Activities

1. Have shooters compare the first groups they fired with the last one. Discuss the reasons they feel are important in causing those differences.
2. Use the triangulation exercise to evaluate sight alignment.
3. Have shooters write what they learned in this lesson in their shooting journal or notebook.

Sharing and Exhibit Ideas

1. Make a step-by-step poster or series of posters depicting the shooting process to be used in teaching.
2. Display your shooting journal with a series of targets, group sizes or other indications of changes in shooting ability.
3. Make a rifle rest that can be used in the bench-rest position.
4. Make a shooting bench that can be used in bench-rest shooting.

Lesson 4 Narrative

Before we get started with this lesson, let's review material we have covered on safety and marksmanship. Each shooter is responsible to all others on the range for his or her actions. The shooter alone controls the direction the rifle is pointed. That makes each shooter responsible for obeying all range safety and procedure commands and abiding by the protocols of good sportsmanship. Firearms are inspected by both the shooter and the range officer to assure safety. However, the shooters must practice self-control, muzzle control and trigger control at all times. We follow three basic rules to assure others on the line that each rifle is safe. The muzzle remains pointed in a safe direction at all times. The rifle remains empty with the action open and exposed to view except when it is being fired. The finger is kept off the trigger except when in the act of shooting. In addition to those firearms handling rules, each person on the range must have adequate eye and ear protection when live firing takes place.

The fundamentals of marksmanship have been established as well. We have learned proper sight alignment and the reasons for using consistent sight alignment. Trigger control is exercised to fire the rifle without disturbing the sight alignment. Follow through is critical to good shooting form. Finally, we learned to assume a stable bench rest shooting position. We practiced loading and unloading the rifles properly, and used both dry-firing and live- firing techniques to practice shooting on blank targets or target backs.

Join your partners, get your equipment and move to the line. Remember to keep the muzzles pointed in a safe direction with the actions open and the rifles empty. The range officer will check each one on the way to the firing line. Coaches, put your rifles in the racks until you change roles. Once your rifles have been grounded, hang a target with the back facing the shooter. On command, shoot a five- shot group at the target back, being careful to use proper shooting form as you fire your group. After the first relay fires, we will clear the line, reverse roles and let the second relay fire their refresher shots.

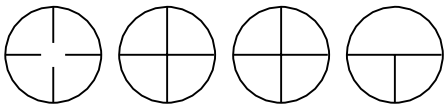
Sight Picture

A sight picture is a properly aligned set of sights in relation to a target. Proper sight alignment is essential for developing a sight picture. Throughout the sighting sequence, the eye should remain focused on the front sight. The rear sight and target will both be slightly out of focus. Once the sights are properly aligned, they are moved as a unit into proper position relative to the target.

Two basic types of sight pictures are used in precision shooting, the center-of-mass hold and the six o'clock hold. With the center-of-mass hold, the aligned sights are centered on the intended point of impact. The bullet should strike precisely at the top of the post, the

center of the aperture, or the center of the telescopic sight's reticle. With the six o'clock hold, the entire bull is centered on the top of the front sight. This "pumpkin on a post" sight picture is considered somewhat more precise with a bead or post front sight. Many shooters prefer to see just a hair's breadth of lighter colored material between the top of the sight and the bottom of the bull. They feel it helps to keep them from drifting up into the bull slightly.

Both types of sight pictures have advantages and disadvantages. The six o ' clock hold gives a somewhat more precise aiming point on a target. The exact location of the bull relative to the sight is easy to see, and the target is not obscured by the sights. In field shooting, no bull is present; and it may not be clear where to hold on the game animal relative to the top of the sight. The center-of- mass hold allows easier positioning of the sight on the game animal or target. In some cases a large portion of the target is obscured by the sight while aiming. In field shooting, however, the point of impact on the animal is fairly clear and evident. Both types of hold or sight pictures are acceptable. Try them. See which one you prefer (which one fits your purposes and gives you better results) and stick with it. NEVER change sight pictures during a series of shots being fired asa group.



Sight pictures differ slightly with different types of sights. With telescopic sights, the optics cause both the reticle and the target to appear on the same plane. That leaves both of them in sharp focus. The cross-hair, top of the post or dot is placed on the intended point of impact. With receiver sights (peep or aperture rear sights), a front post or bead is held either on the center-of-mass (the intended point of impact) or at the bottom of the bull (six o'clock hold). With an aperture front sight, the target is centered in the front aperture, just as the front aperture is centered in the rear one. With open rear sights, most shooters prefer a six o'clock hold; but a center of mass hold is also acceptable. The main thing to remember is to stick with one type of sight picture once you have decided which one gives you the best results.

Shooting at Target Faces

Now let's return to the shooting line. First relay to the line. Assume a bench-rest shooting position. Is the line ready? Respond by firing point number, please. The line is ready. Shooters, verify that your rifles are empty, leave the actions open and check to be sure the safety is on. Coaches, verify the safety of each rifle. Charge the rifle with air if needed and load. Coaches may assist with this operation. Align the sights properly. Remember to keep your eye focused on the front sight and to position the front sight in

proper relation to the rear sight. Obtain the desired sight picture. Move the rifle rest or sandbags if necessary to obtain the sight picture. Switch the safety to the “fire” position. Squeeze the trigger, keeping the sights aligned and the sight picture stable. Hold the sight picture until the bullet or pellet strikes the backstop. Move the safety to the "on" or "safe" position. Open the action and make the rifle safe, keeping the muzzle pointed down range. You may fire three to five more shots. Remember to keep the same sight picture for each shot. Cease fire. Open all actions and make your rifles safe. Ground your rifles after they have been made safe and step back one step from the bench. Change roles within the coach-pupil team and repeat the entire exercise. Remember that we will fire the first shot on commands.

This live firing exercise should be repeated several times without adjusting the sights (as long as the shots are printing somewhere on the target face). The object is to have each shooter fire a relatively small group that can be used as a foundation for sight adjustment.

Triangulation Exercise

The objective of this exercise is to check the precision or consistency of the shooters sight alignment and to develop a proper sight picture. Each rifle has been made safe, with the bolt removed and an open bolt indicator installed. The rifle is secured in a rest anchored to a shooting bench. The rifle is adjusted in the rest so that it points at a blank sheet of paper on the wall between 25 – 50 feet away from the rifle muzzle. Without touching or moving the rifle’s supports, the shooter looks through the sights and aligns them. Then he or she directs the range assistant to move the “bull” (the bull is a single bullseye target with a small hole poked in the ten ring) until it forms a proper sight picture with the aligned sights. The assistant will mark the location through a tiny hole in the bull. Repeat the process at least three times. The size of the triangle or group indicates the degree of precision used in aligning the sights and the shooters understanding of obtaining a consistent sight picture. Sight alignment has a much greater impact on the size of the group than does sight picture. Shooters experiencing difficulties with sight alignment and sight picture should participate in this exercise with a range assistant as needed.

Sight Adjustment

The sights align the eye with the bore of the rifle. If the sights are not aligned with the bore, the point of impact does not match the point of aim. The point of aim must be moved to coincide with the point of impact. In other words, the sight must be aligned with the bore. The center of a group of shots fired with the same sight setting and the same sight picture is used as a reference point in adjusting the sights. That takes into account the variation in sight alignment, sight picture and in the rifle itself.

The sights are adjusted in two planes. The horizontal (right and left) adjustment is known as **windage.** The vertical (up and down) adjustment is called **elevation.** Although it seems to be moving in the wrong direction, the basic rule in sight adjustment is to move the rear sight in the direction you want the point of impact to move.

Sights are adjusted in several different ways. Telescopic sights and receiver sights with micrometer adjustment have windage and elevation adjustment knobs. The knobs may have positive click stops or lines used as a reference in sight adjustment. The approximate value of each mark or click should be listed in the instruction manual with the sights, but a better value can be determined by field testing. Every time you adjust the sights, you should note how much movement of the point of impact you got for each click or line of adjustment in the sights. Remember, the adjustments are in minutes of angle. That means that they will change in absolute value with changing distance. One minute of angle (MOA) equals one inch at 100 yards or approximately28 mm at 100 meters. A one MOA adjustment at 50 yards would only move the point of impact 1/2 inch. At 50 feet that movement would only be about 1/6 inch. Since many sights have divisions that allow adjustments as fine as ¼ or 1/8 MOA, the shooter can make extremely small corrections in sight settings when needed.

The general procedure for adjusting sights or sighting in a rifle involves repetition in a trial and error process. First, fire a three- to five-shot group using the same sight setting and sight picture. Measure the vertical and horizontal distances from the center of the group to the point of aim or intended point of impact. Estimate the number of clicks or lines that the sights will need to be moved in each direction to reach that desired point. Move the sights and record the amount and direction they were moved. DO NOT forget this step. It is very important both now and in the future. Fire a second group (three to five shots) using the same sight picture. Note the new location of the group center. Using the amount the sight was moved and the distance the hits were moved, calculate how much more the sights need to be moved and in which directions. Repeat the process of adjusting the sights and shooting groups to verify their settings until the group is centered on the intended point of impact. Stay with it until you are satisfied.

Some open rear sights must be adjusted with uncalibrated screws or wedges. Others may be moved only by drifting them into a new location with a punch. Some primitive sights were adjusted by means of a small file. The principles are the same, but the precision of the adjustments may be a bit crude.

Very few rifles require adjustment of the front sight. If front sight adjustment is necessary, the sight should be moved toward the existing point of impact. Archers, who use an adjustable front sight, refer to this as “chasing the hits with the sight.”

Adjusting the Sights on Your Rifle

Let’s apply this information on sight adjustment to the sights on the rifles you are using. Use the groups you have shot earlier to determine the direction and the amount you should move your sights. Work as a coach- shooter pair on the adjustments, and discuss the adjustments needed with a teen leader or an adult range assistant. Make the sight adjustment, keeping the muzzle of a safe rifle pointed down range. [Use standard range commands to control the range throughout this exercise.] Once you have finished adjusting the sights on your rifle, switch roles with your partner and assist them with the process.

Summary

This lesson taught us how to combine sight alignment with the target for a proper sight picture. We reviewed the process of firing a shot, then fired groups on a standard target, and learned how to adjust the sights for accurate shot placement. Next session we will fire a short match from the bench-rest position and learn how to score targets.

Summary Activities

1. Have each shooter evaluate a group and estimate how many clicks they would need to move their sights to adjust the point of impact to the center of the bull.
2. Have each shooter record the sight adjustments they made and the distance the point of impact moved for that adjustment in their shooting journal. Help them to figure out how large the movements would have been at a different distance.

Sharing and Exhibit Ideas

1. Shoot a series of groups, moving the sights a set number of units with each group. Note how much change in the point of impact results from each unit of change in the sight setting.
2. Demonstrate how to adjust the sights on a rifle, using a series of targets to show how the adjustments moved the point of impact.
3. Make a model to illustrate how sight adjustments are made and how they correct the point of aim to the point of impact.
4. Share what you have learned about sight picture and sight adjustment with an interested adult.

Lesson 5 Narrative

Before we begin shooting today, let's review the fundamentals we have already learned. We will continue to follow the rules of safe shooting on the range, including using eye and ear protection. Proper sight alignment is fundamental to development of a sight picture, breath control, trigger control, and follow through is essential for accurate shooting. We have learned to follow range commands, and we will continue to use the expanded ones for this session. Finally, we learned last time how to adjust the sights on our rifles to center the point of impact on the desired spot.

Sight Picture and Sight Adjustment from Bench

[*Instructor note:* Use the expanded range commands to bring the first relay of shooters and coaches to the line. Have them dry fire several shots on a standard target while reinforcing sight alignment, sight picture, breath control, trigger control and follow through. Once they have dry fired a few shots, move on to live firing and fine tuning their sight adjustment.]

Adjusting the Sights on Your Rifle

Now, fire a three- to five-shot group using a consistent sight picture. Use that group center to adjust your sights. Check them by firing several more shots until you are satisfied with the adjustment. Discuss any questions with your "coach" and a teen or adult leader. Be sure to keep the muzzle down range during all adjustments. Once you have finished adjusting your sights, switch roles and let your partner adjust the sights on his or her rifle.

[Instructor note: Use standard range commands to control the range throughout this exercise. If each pair of shooters will be using the same firearm, have the first shooter fire a record target before switching roles and repeating the process.) Once you have finished adjusting the sights on your rifle, switch roles with your partner and assist them with the process.

Shooting for Scores

Now that you have adjusted your sights we will be shooting one ten-shot target for scoring. Mark a target with your name and hang it on the target frame. Use the center bulls, the ones with the line around them, as sighting targets if you feel the need. Shoot only one shot at each of the scoring bulls on the target, moving clockwise around the target face. Use a loading block to keep track of the shots you have fired, and be sure you are shooting at the proper target. Once you have completed your string of shots, switch roles and observe or spot as your partner shoots his or her scoring shots.

[Standard range commands should be used to operate the range during this shooting session. Allow approximately 20 minutes for the series of 10 shots, but if all shooters finish early be prepared to move on to the next session.]

Scoring Targets

Each scoring target has a maximum value of 10 points. The tiny dot in the center of the air rifle or small-bore target has the value of 10. Shots that remove the dot are center shots or X’s. Each consecutive scoring band is

worth one less point than the one inside it, so the target scores 10-9-8-7-6-5- 4-3-2-1. The ring between the dark bands is part of the higher value scoring area. Any shot touching the ring is given the higher score. Shots that fail to touch any of the scoring area are given a value of zero.

Sometimes a shooter gets confused and fires extra shots at one bull without firing at another one. If the target has only the proper number of record shots, the extra shot is penalized one point and referred to the bull that was not fired upon. If excess shots are taken on the target, the shooter loses the higher value hit on each target with multiple shots, even if that shot is outside the scoring area. If those excess shots were fired by another shooter (cross-firing), they are not counted against the shooter and are recorded as misses for the person who fired them. If the first sighting shot falls outside the sighting area and the shooter indicates that it did so, it is not counted as an excess record shot.

Scoring a target can be challenging. Holes may not be cleanly cut, and the exact edge of the bullet hole may be unclear. Scoring gauges or plugs are extremely valuable in that situation. An inward scoring plug indexes in the bullet hole and shows where the edge of the bullet struck. If the edge of the gauge or plug touches the scoring ring, the shot is given that value. Inward scoring gauges are also used to determine center shots. If the flange of the gauge does not touch the 9 ring, the shot is scored as a center shot. An outward scoring gauge makes determining “tens” easier. It uses the 7 ring as a reference. If any of the 7 ring is visible, the shot counts as a 10. If the flange obscures the 7 ring, the shot counts as a 9.

Scoring Your Targets

Each of the scoring bulls on the target you shot is worth 10 points, so your total possible score could be as high as 100 points. Do not worry about the score you made. You should record it in your shooting journal, but our main objective is to learn how to score a target.

Score several targets in a small group. The first time through, score them without using any type of scoring aid. Record the scores on your pad, listing each bull by number and score. Then score them again using the scoring gauges. Work with an adult or teen leader to verify your scores. While the scores are being posted, you may want to try scoring several other targets using the gauges.

Summary

In this session we reviewed sight alignment, sight picture and trigger control. We sighted our rifles to place the center of their groups on the center of the bull, and fired a ten-shot match from the bench-rest position. We also learned how to score targets and how to use scoring aids. The next session will start teaching the basic shooting positions, using the standing or off- hand position.

Summary Activities

1. Have each shooter shoot a series of ten shots on a standard target and score their target. Be sure to have them record their scores, sight adjustment measurements and other new items they learned in this session in their shooting journals.
2. Provide a group of targets for scoring. Have each shooter score the set, and compare their scores. Provide scoring aids and have them repeat the scoring as a group. Note how the scoring changed on some close shots.
3. If time permits, allow shooters to fire an additional match from the bench-rest position. Have them compare their scores from the two matches and try to determine why any differences exist.

Sharing and Exhibit Ideas

1. Demonstrate how to score a target.
2. Demonstrate the proper use of inward and outward scoring gauges.
3. Record the scores fired and the things you learned in your shooting journal. Display the journal or discuss the contents with an interested friend or adult.
4. Look up a target shooting game fired with air rifles or smallbore rifles. Discuss the targets used and the rules. Outline the game for your shooting group, or share your findings with an interested person.

Lesson 6 Narrative

All of the principles of firearms safety and personal safety we have practiced in our earlier sessions continue to apply. Self-control, muzzle control, action open and exposed on an empty rifle and finger off the trigger have become practiced habits for safety. You should feel partially undressed without eye and ear protection properly in place. You are the one responsible for safety on the range and the range staff will help to keep shooting safe for all of us.

The fundamentals of good rifle shooting are simple, and we have practiced them many times. Sight alignment, sight picture, breath control, trigger control, and follow through are the core of good rifle marksmanship.

The range commands that govern activity on the range should be familiar enough that anyone of you could act as a range officer. The expanded range commands and shooting procedures we have been using are also very familiar, and they should help you shoot better.

Sight adjustment has been introduced, and you have had a chance to practice it several times. In the last session, we fired a match from the bench-rest position and scored those targets, learning how to use scoring gauges or plugs. Now we are ready to introduce the classic rifle shooting positions.

Shooting Positions

Rifle shooting positions refer to the posture and attitude of the body and the rifle during shooting. Several common characteristics are common to all sound shooting positions. They form the foundation of good shooting. The body should be comfortable and relaxed. Most of the support for the rifle should come from the skeleton or bones, with minimum muscle activity and potential joint movement. The body should be aligned with the target so minimal of muscular activity is needed to center the sights on the target, this is referred to as **the natural point of aim**.

Several classic shooting positions have evolved over the years. You have already learned the bench-rest position and used it many times. It is the most stable of all shooting positions. We used it to learn basics because it gives shooters a high level of support and success.

The **standing position** is the most challenging. It involves fewer points of support for the rifle, more muscle activity and less stability than all the others. Two basic forms of the standing position differ only in the amount of support for the non-dominant arm. The **armrest standing position** is used for all types of target shooting. The **off-hand** or **free-arm standing position** was formerly used in light rifle shooting. It is still used by many field shooters when a more stable position is not possible.

The **kneeling position** adds support and provides greater stability than either of the classic standing positions. Kneeling positions are used in smallbore position shooting and in field shooting.

The sitting position is more stable than the kneeling position. Two forms are most commonly seen, **cross-legged** or **closed sitting positions** and an **open- legged sitting position**. Both forms give excellent shooting results. In four- position rifle shooting, the rules define legal sitting positions. Field shooters also use this position.

The **prone position** is the most stable of the classic shooting positions. It is used in numerous types of shooting, both on the range and in the field.

All of these positions may be used with additional support by field shooters. Portable supports like shooting sticks or rifle mounted bipods or any available structural support like trees, posts, rocks or logs can add support for better shot placement.

[*Instructor note:* The best and most successful learning sequence for young people who can handle all of these positions moves from the bench- rest position to standing. After the basics of the standing position are learned, the shooter can proceed to kneeling, sitting and prone – *in that order!*

Teach all of the positions, even if your event or the one you think they are interested in learning does not involve all of them. Rifle shooters tend to do more than one thing, and the positions will find use in their shooting. We begin with the most difficult and unstable of the positions and move toward the most stable one. That aids learning in several ways. The leap from the bench to standing is tremendous. Scores plummet, but the shooter understands the potential accuracy of the rifle. As a result, they know that work must be done to improve their standing position scores. Muscle tremor and fatigue enter the picture with the progression through the positions stability and achievement increase. That builds confidence and reinforces the need for concentration on the standing position or its poor utility for field shooting. The young person is also challenged to continue practicing for better scores.

You will note that *breath control* has not been mentioned thus far. Nearly every shooter will stop breathing naturally during the sighting and shooting sequence. Mentioning breath control or advising any of the outmoded ways of proper breath control causes more problems than it cures. Comment on it only if a shooter is having problems, then note that the best shooters

merely stop breathing for a brief time (about three to five seconds) after a shallow inhalation.]

Learning the Standing Positions

The most commonly used standing position is the arm-rest standing position. The shooter stands with the feet about shoulder-width apart and the toes at nearly a right angle to the target. The weight is equally distributed, and the shoulders are in line with the target. The head and body are erect. As the rifle is mounted, the body bends back slightly to counter the mass of the rifle and keep the center of mass over the spot between the feet. The upper part of the non-dominant arm lies along the rib cage and is supported by it. For shooters who are able to do so, the elbow rests on or inside the flare of the hip. Try getting into position without the rifle. The butt of the rifle is placed high in the shoulder pocket, so the sights are at eye level without moving the head. The dominant hand grasps the rifle grip with the trigger finger along the trigger guard. The non-dominant hand supports the rifle's forend the hand supporting the stock may be open, held flat under the forend, clenched into a fist with the rifle resting on the first digits of the fingers or pinched together with the forend resting on the finger tips or the thumb and finger tips. All of these positions are acceptable. Try them and see which one fits you best.

Fatigue is a significant factor in shooting from the standing position. Shooters in position matches rest the rifle on rifle stands between shots. Many coaches and range officers consider the rifle stand an important safety device as well. It keeps the rifle pointed down range while allowing the shooter an opportunity to rest between shots. Rifle stands need not be elaborate or expensive. They should hold the rifle slightly below shoulder height, permitting the shooter to load the rifle and begin aligning the sights before the rifle is lifted from the stand and positioned for firing the next shot.

The body should be moved until the rifle rests on the target naturally. This "natural point of aim" is basically having your rifle aligned with your target to minimize the effects of body movement. To achieve natural point of aim, the shooter gets into position with eyes closed. When the eyes are opened, if the sights are not pointing at the target the shooter adjusts his/her stance. Vertical adjustments can be made by changing target height, moving the supporting hand forward or backward on the forend, changing the body posture slightly or applying muscle power. The last option is the least desirable, since it involves muscular movement and joint instability. Horizontal adjustments are made by moving the feet until the rifle rests on the target naturally. Having the natural point of aim on the target reduces the wobble area to a minimum and increases both consistency and accuracy.

Let's dry fire several shots. [Use the expanded range commands and walk the shooters through several shots. Reverse roles and repeat the dry-firing sequence. Repeat several times if needed.]

Now let's try a series of five shots. Pick a single bull on the target, take your time and shoot at the same point of aim for each shot. [Use the expanded range commands for the first shot, then allow the shooters to fire the rest of the shots on their own. Reverse roles after five rounds and repeat the sequence several times if desired. Change targets and analyze the groups between shooting sessions, forcing the shooters to rest. Left on their own, the shooters will tend to shoot too much, too quickly and without adequate rest. That results in learning bad habits. Prevention is easier than a cure.]

Other Standing Positions

The free-arm standing position or off-hand position is less stable than the arm-rest standing position. The only difference is the position in the posture of the arm supporting the forend. The arm-rest position supports the arm with the side of the body. The free-arm position has the arm extended enough for the upper arm to be held away from the body.

The supported-standing position makes use of any available support to add stability to the arm supporting the forend. Rigid objects make the best supports. If the support is made of hard material, the non-dominant hand should form a cushion between the support and the rifle stock.

Supported standing positions are not used in formal target shooting, but they are extensively used by hunters. The purpose of the rifle in hunting is to achieve a quick, clean kill. Any aid to accurate shot placement, like the use of support for shots taken from the standing position, shows respect for the game animal and sound hunting ethics.

Let's shoot another group on one bull of the target using a supported- standing position and compare the results with those fired from the arm- rest standing position. [Use the expanded range commands and encourage careful shooting. Reverse roles and repeat with the other shooters. Compare the group size and placement for those shot without support and those with it. Discuss the reasons and usefulness of the supported position.]

Summary

In this session we introduced the basic shooting positions and learned how to use the standing position. We shot groups using the formal standing position and a supported one. We discussed the off-hand or free-arm standing position. We stressed the importance of aligning the body with the target so the target is on the rifle's natural point of aim. Next time we will introduce the kneeling position.

Summary Activities

1. Compare the groups fired from the two starting positions and discuss the reasons for the differences.
2. Analyze the shot placement on a series of standing targets relative to alignment with the natural point of aim, looking for lateral stringing of the shots.
3. Diagram the skeletal support of shooter in standing position.
4. Allow shooters to fire a ten-shot match from the standing position and record the results in their shooting journals.

Sharing and Exhibit Ideas

1. Make a poster showing a proper standing position. Illustrate skeletal support and proper rifle positioning.
2. Demonstrate one or more of the standing positions.
3. Record what you learned today and the scores in your shooting journal. Exhibit the journal at a suitable event.
4. Record your progress in shooting from the standing position on a graph, taking the results from your shooting journal. Discuss the changes you made or the reasons for the progress.
5. Study a shooting match that uses a standing position. Share the content and rules of the match with your shooting group or another interested group.

Lesson 7 Narrative

Position rifle shooting involves the same personal and shooting safety procedures we have been practicing up to this time. Two major principles govern all position shooting. First, the support for the rifle must be supplied as much as possible by the bones, not the muscles. Second, the shooter will perform best when the body is relaxed and the natural point of aim for the rifle is on the target. In the last session we learned about standing positions and fired from the classic target shooter's standing position and a supported-standing position. We are going to shoot a ten- shot match from the standing position to review.

Reviewing the Standing Position

[Instructor note: Use the standard range commands to control the line.] Before we do any live firing, dry fire several times to prepare yourself. Now fire a ten-shot match. Shoot only one shot at each scoring bull. If you need to fire some sighters, use the two bulls in the sighting ring. (Allow all shooters to fire a ten-shot series, keeping things moving, but not hurrying the shooters.) Now retrieve your targets and put fresh ones on the hangers.

Learning the Kneeling Position

The kneeling position gives more support than the standing position. Watch carefully as we demonstrate. The dominant-side leg is tucked under the body with a kneeling roll tucked under the ankle or foot. Three foot positions are acceptable. The foot may be supported by the toes with the heel raised, allowed to lie on its outer side or stretched out with the top surface on the ground or mat (supinated). The shooter may sit on the foot or heel as long as the buttocks do not touch the mat or ground. The non- dominant leg is held with the lower leg vertical as a support for the non- dominant arm.

The non-dominant elbow is placed on or over the upright knee, forming a fairly solid brace for the supporting arm. The head is erect and relaxed. The body inclines forward slightly, supported on the elbow and knee. The body should be relaxed.

The rifle is positioned rather high in the shoulder pocket, bringing the rifle into alignment with the shooter's eye. On rifles with adjustable butt plates, the butt plate can be lowered to fit the shoulder pocket while the comb is raised to position the sights in line with the eye. The dominant hand grasps the rifle's grip with the trigger finger along the trigger guard. The non-dominant hand supports the forend. The hand may be braced against a hand stop and the arm may be supported by a sling.

The natural point of aim must be on the target if the best accuracy is to be achieved. Aligning the body to the target so the rifle points naturally to it is essential. Vertical adjustments in the natural point of aim can be achieved either by moving the target to the existing point of aim or by moving the position as the hand on the forend. Moving the hand forward

(toward the muzzle) lowers the rifle. Moving it back (toward the receiver) raises the rifle. Horizontal adjustments are made by pivoting the body on the dominant foot or the kneeling roll and moving the upright (non- dominant) leg into alignment with the target. Try getting into a kneeling position without a rifle. Let the teen leaders and other range assistants help you.

Shooting from the Kneeling Position

[Use the standard range and shooting procedures to control the line during this shooting session.]

Now, let's apply what we have learned about the kneeling position on the range. Dry fire several shots before shooting a five-shot group on a selected bull. Check to make sure that the rifle is lining up with the target naturally. Concentrate on your shooting form and shoot a group using a consistent sight picture.

Using a Supported-kneeling Position

Many field shooters find an application for a supported-kneeling position. Shoot another group on a different bull using the position being demonstrated. Any support for the forend and hand can strengthen the kneeling position. Shooters often used cross sticks or other available support. In the range environment, a chair back makes a convenient rest. Remember to cushion the forend with the hand during the firing. Compare the group you shot in the classic kneeling position with the one fired from the supported position. How do the two groups compare? Why might a field shot prefer to have the additional support? [If time permits, have the shooters fire a ten-shot kneeling match as a wrap-upactivity.]

Summary

In this session, we reviewed the fundamentals of position shooting from the standing position and learned to use the kneeling position. We also compared a supported-kneeling position with the classic, target-shooting kneeling position. In our next session we will explore the sitting position.

Summary Activities

1. Have all shooters fire a ten-shot match from the kneeling position. Score the targets and enter the scores in journal.
2. Discuss the difference between the standing and kneeling scores and the reasons for that difference. Focus on differences in stability of the positions and the number of support points.
3. Have each shooter try using different positions for the dominant foot to determine which of them is most comfortable.
4. If it has not been done already, demonstrate how to use stock adjustments to aid in proper shooting form. Include the use of the sling and hand stop.

Sharing and Exhibit Ideas

1. Make a poster showing proper kneeling positions. Include an outline of skeletal support and rifle positioning.
2. Demonstrate the kneeling position, showing the variety of foot positions possible. Discuss adjustments for placing the natural point of aim on the target.
3. Record your scores and the new things learned in this session in your shooting journal. Exhibit the journal in a suitable event.
4. Record your progress in the kneeling position on a graph, taking the results from entries in your shooting journal. Discuss the changes you have made and the reasons for them.
5. Study a shooting game that uses the kneeling position. Share the game and its rules with other shooters in your group or with other interested persons.
6. Share what you have learned about rifle shooting positions with an interested adult.

Lesson 8

Narrative

We have become very familiar with personal and shooting safety on the range, and we have learned to apply the basic principles of position shooting. We make every effort to have the target location coincide with the natural point of aim for the rifle. We also strive to have the rifle supported primarily by the bones with as little muscle involvement as possible. We have fired from the standing and kneeling positions, both with and without support and noted the differences in our group size and scores. We also shot several short matches while reviewing the basics of those positions. During this session, we will explore the sitting position and find one that is most effective for us.

Practicing the Standing and Kneeling Positions

[Use standard range commands and procedures to control the line.] Before doing any live firing, dry fire several times to help your *mind* prepare for a short match. Now fire a ten-shot match from the standing position. Remember to shoot only once at each bull. If you need to fire any sighters, use the two bulls inside the sighting ring. [Allow the shooters to fire a ten-shot series. Keep things moving, but do not rush them as they shoot.]

Assist your partner as he or she fires their record shots standing. Retrieve those targets and replace them with fresh ones. Fire another ten-shot match, this time from the kneeling position. When you are finished, make your rifles safe and ground them.

Learning the Sitting Position

The sitting position is used in four-position shooting and in field shooting. It has abundant support for the rifle and provides a stable platform for accurate shooting. The shooter sits on the ground or the shooting mat, using the legs as supports for the elbows. Several acceptable styles of sitting position are used. We will demonstrate each one and allow you to try them without equipment. Then you can apply the one you prefer on the range.

All sitting positions share some common elements. The shooter is sitting down, firmly planted on the ground or mat. The body is inclined forward from the *waist,* relaxed and resting on the elbows. The head is as erect as possible, leaning forward slightly to avoid strain on the neck. The elbows are braced at the knees.

In the extended, open sitting position, the shooter sits nearly square to the target. The knees are fairly high, and the feet are firmly planted a bit more than shoulder width apart. The elbows are usually set inside the knees or slightly ahead of the knees. Note that placing the point of the elbow on the point of the knee is quite unstable, almost like trying to put two balls atop each other. In the extended, crossed-ankle sitting position, the shooter sits facing about 30 degrees to the dominant side of the target. The legs are extended forward with the ankles crossed. The elbows rest on the insides of the knees.

In the closed sitting position, the shooter sits facing slightly more to the dominant side of the target, perhaps 45 to 60 degrees. The non-dominant side leg is crossed over the dominant-side leg and pulled in rather close to the body. The feet are tucked up under the opposite legs, supporting them with the sides of the foot. As in the other positions, the elbows rest in the hollows inside the knees.

The butt of the rifle is settled in the shoulder pocket, and the sights are level with the eye. The non-dominant hand supports the forend of the rifle, perhaps with the aid of a sling and hand stop. The shooting hand grasps the rifle grip with the trigger finger lying along the trigger guard.

Vertical adjustments in the point of aim are made by changing the target height, the location of the hand on the forend or the position of the feet. Moving the hand forward on the forend lowers the rifle. Moving it back toward the receiver raises it. Similarly, extending the legs (feet) or moving them further apart lowers the rifle. Drawing the feet toward the body or moving them toward each other raises the rifle. Horizontal adjustments are accomplished by pivoting the entire stance from the base.

Try these positions without equipment to see which suits your build and size the best. All of them are stable and completely acceptable sitting positions. Raise your hand if you need some help or have a question.

Shooting from the Sitting Position

[Use standard range procedures to control the range during this firing sequence.] Let's move to the range and try this new position by firing a group. First, get into the sitting position you have selected. Orient yourself to the target, and dry fire several shots to get the feel of the position. Select a single bull and fire five shots trying to shoot a nice, tight group. Change roles with your partner and repeat the process. [After the targets are retrieved, pause while the groups are discussed. If time permits, have each shooter fire a ten-shot match from the sitting position, score the targets and evaluate the results.]

Summary

In this session we have reviewed the principles of using the natural point of aim and using skeletal support for solid shooting positions. We have fired short, practice rounds from the standing and kneeling positions; and we have developed a sitting position. In the next session, we will be exploring the most stable of the shooting positions -prone.

Summary Activities

1. Have each shooter fire a ten-shot match sitting. Score the targets fired from the three positions and evaluate the scores. Record all scores in the shooting journal.
2. Discuss the differences in the scores or groups fired from the three positions. Focus on the number of support points for the position and their stability.
3. Have each shooter try each of the sitting positions to see which one is most comfortable and consistent for them.
4. Demonstrate the use of the sling, other accessories and stock adjustments and their impact on attaining a proper position.

Sharing and Exhibit Ideas

1. Make a poster of the sitting positions. Include an outline of the bones supporting the position and the proper position of the rifle.
2. Demonstrate the various sitting positions for another interested person, showing how to alter the natural point of aim to compensate for different target locations.
3. Record your scores and the new things learned in this session in your shooting journal. Exhibit the journal at a suitable event.
4. Record your progress in the sitting position on a graph. Extract the data and your observations from your shooting journal. Discuss the changes you have made and the reasons for them.
5. Share what you have learned about rifle shooting positions with an interested adult.

Lesson 9 Narrative

We will continue to use the personal and shooting safety procedures as we have throughout these sessions on rifle shooting. Supporting the rifle with the bones while minimizing the use of muscle power is essential to good rifle shooting. Using a proper position and moving the body to place the target at the rifle's natural point of aim enhance the ability to shoot well. Aside from the muscles that must be used, the body should be comfortable and relaxed when shooting.

We have learned three positions so far. We started with the standing position, learning three varieties: arm-rest, free-arm and supported-standing positions. We have practiced a proper standing position each time. The kneeling position also involved three variations. The dominant foot could be placed in three attitudes, with the shooter sitting on the foot. Additional support could be added to the kneeling position by field shooters when conditions were appropriate. Then we added the sitting position. It provided greater support and stability, and we tried several forms to find the one most consistent and comfortable for us. Today we will be learning the most stable of rifle position without additional support - the prone position.

Review and Practice Shooting

(Instructor note: All shooting in this session should use the standard range commands and shooting procedures. If time does not permit shooting matches in each position, have shooters fire three to five shots from each of the positions learned earlier. This constant reinforcement is a strong aid to learning.)

Before we begin learning the prone position, let's review the other positions we have learned. With the assistance of your coach and the range assistants, get into your standing position. Dry fire several times to refresh your skills, then shoot ten record shots. Remember to shoot only once at each bull. You may fire as many sighter shots as needed, but be sure to keep them on the sighting bulls.

Once you have completed the standing stage, change targets and repeat the sequence (dry firing and live match) with the kneeling and sitting positions. Pay careful attention to your shooting form to build stable shooting positions. After the shooters on the first relay have fired their standing, kneeling and sitting scores, change roles and have the other members of the coach-pupil teams fire the same course.

Learning the Prone Position

The prone position is the most stable of the unsupported rifle shooting positions. The body is supported for almost its entire length on the ground. The elbows are braced on the mat or ground, and the rifle is supported by both elbows and the shoulder. To develop a prone position, the shooter lies down on the shooting mat facing slightly to the dominant side of the target. The non-dominant elbow is in front of the shooter. Most shooters find that flexing the dominant knee slightly gives them a more stable and comfortable position with less tremor from their heartbeat. Flexing the knee will force the weight to

shift slightly to the non-dominant side. The feet may be supported on the tips of the toes, turned in or turned out at the shooter's discretion. Avoid the temptation to cross the feet with the legs straight. Doing so tends to invite a narrow, less stable position and tremors caused by moving the feet. The head should be as erect as possible without causing muscle strain. The neck should feel relaxed. Try this position without a rifle, and experiment with leg and foot positions to find one that is comfortable and stable for you.

The butt of the rifle should be firmly planted in the shoulder pocket with the sights at eye level. The non-dominant hand should support the forend of the rifle. On rifles equipped with slings and hand stops, the sling should be carefully adjusted to provide additional support for the forward arm. The hand should be firmly pressed against the hand stop and held in place by the sling. If this method is to be used, a shooting glove is almost essential for shooter comfort. The rules for position shooting require the shooter's forearm to maintain an angle of 30 degrees or more from the mat or ground. Braced in this position, the rifle should return naturally to alignment with the shooter's eye after any disturbance of the rifle's position. The dominant or shooting hand grasps the rifle's grip and provides additional support from the elbow being braced against the mat or ground.

Aligning the Rifle to the Target

Moving the body to have the rifle point to the target naturally is the key to good prone shooting. Vertical adjustments can be made by altering the target height if necessary. Minor adjustments in vertical position can be made by altering the location of the forward hand on the forend. Moving the hand forward lowers the muzzle while drawing it back raises the muzzle. Any alterations in hand position should be done along with adjustments to the hand stop and sling if they are being used.

Horizontal positioning is accomplished by pivoting the body. The forward elbow should be the pivot point for the body. All adjustments should be made involving the entire torso and lower body, allowing the body to be relaxed in the shooting position. Test the position to see that it is naturally aligned with the target, and re-adjust the position until it is right. Dry fire several times to check your position, then fire a five-shot group at one bull on the target. Once you have fired that group, add additional support (a post, rifle rest or sandbags) and fire a second group at a different bull. Then trade off with your partner and help him or her through the same firing sequence. Compare the supported and non-supported groups. Do they differ as much as the ones fired from the other positions? Why do you think that is the case? If time permits, each shooter should fire a ten-shot match from the prone position. Remember to shoot only once at each bull and to use the same position you have developed in the exercise where you shot for a group.

Summary

The core concepts of position rifle shooting have been developed. The target must be on the natural point of aim for the rifle, and that natural point of aim is adjusted by moving the body and the rifle as a unit. The neck and body are relaxed and comfortable. The rifle is supported as much as possible by the

skeleton or bones with muscle activity kept to a minimum. The sights are brought to eye level, using adjustments in the placement of the butt plate or by adjusting the butt plate. Although target shooters may not use additional support, field shooters use as much support as possible to ensure vital hits and quick, clean kills.

We have learned four basic rifle shooting positions. The standing position is the least stable and the most demanding of the shooter. The kneeling position adds support. Sitting offers still more, and the prone position is very stable. Each position is defined by specific rules in competitive events, but field shooters can adapt and blend them to fit their needs. In addition to the positions, we have gained more practice in scoring targets and shooting under match conditions. Remember that good shooting is not genetic. It is a skill that must be learned. Practice will not make perfect unless the shooter is practicing the positions properly and with strong concentration on each shot. Perfect practice makes perfect.

Summary Activities

1. Score all targets and discuss the scores fired at each stage with the shooters. Have them record their scores and anything they have learned in the session in their shooting journal.
2. Plan a position shooting program involving practice sessions and some sort of competitive event for those who are interested in competitive target shooting.
3. Compare the series of targets fired in any given position over the course of the instruction. Discuss the stability of the position and the size of the groups or the scores shot using them. Note progress in the scores and encourage continued practice.
4. Suggest additional rifle learning activities for those who wish to continue in rifle shooting. Consider other types of shooting for those who wish to explore them.

Sharing and Exhibit Ideas

1. Demonstrate a selected rifle position for an interested audience, pointing out the stability of the position and any rules related to it.
2. Research a rifle shooting game and share it with your shooting group or another interested group.
3. Attend a rifle match and share the experience with other shooters in your group.
4. Display your shooting journal at an appropriate event.
5. Conduct a series of experiments on the shooting positions by shooting several groups or sets of targets with each one under controlled conditions. Report your results and conclusions in an appropriate manner.
6. Share what you have learned about position rifle shooting with an interested adult or another youth audience.
7. Develop a series of posters on position shooting and shooting safety for a local shooting club.