



State of California – Military Department
California Cadet Corps

(CORPS, 2019) CURRICULUM ON MILITARY SUBJECTS

Strand M13: Marksmanship

Level 11

This Strand is composed of the following components:

- A. Firearms Safety
- B. Rifle Marksmanship Fundamentals
- C. Competitive Marksmanship



M13/A: Firearms Safety

Table of Contents

- B. Rifle Marksmanship Fundamentals 3
 - Objectives 3
 - B1. Introduction to Marksmanship Fundamentals 4
 - B2. Steadying the Rifle & Firing Positions 4
 - B2 (a): The Prone Firing Position:..... 5
 - B2 (b): Use of a Sling: 6
 - B2 (c): The Kneeling Firing Position:..... 8
 - B2 (d): The Standing Firing Position:..... 10
 - B3. Aiming, Sights, and Zeroing the Rifle 11
 - Zeroing your Rifle..... 13
 - Scoring..... 14
 - B4. Breath Control..... 15
 - B5. Trigger Control 15
 - B6. Familiarization and Qualification 16
 - References 18

B. Rifle Marksmanship Fundamentals

Standard #1: Students gain identity and belonging as a cadet while developing self-control, respect, discipline, and confidence.

Objectives

DESIRED OUTCOME (Followership)

Cadets are safely able to use marksmanship fundamentals to engage targets with an air rifle or smallbore rifle. 50% of cadets will qualify at least at the Marksman level.

Plan of Action:

1. Explain why marksmanship fundamentals are key to being able to accurately hit a target with an air rifle or smallbore rifle.
2. Name the parts of a rifle.
3. Demonstrate how to properly hold a rifle while firing at stationary targets, and the prone, kneeling, and standing firing positions.
4. Use a rifle's sights to accurately aim a rifle to hit the target. Demonstrate the process of zeroing a rifle.
5. Demonstrate proper breath control while firing an air rifle or smallbore rifle.
6. Demonstrate proper trigger control while firing an air rifle or smallbore rifle.
7. Experience the processes of Familiarization and Qualification with the air rifle or smallbore rifle.

B1. Introduction to Marksmanship Fundamentals

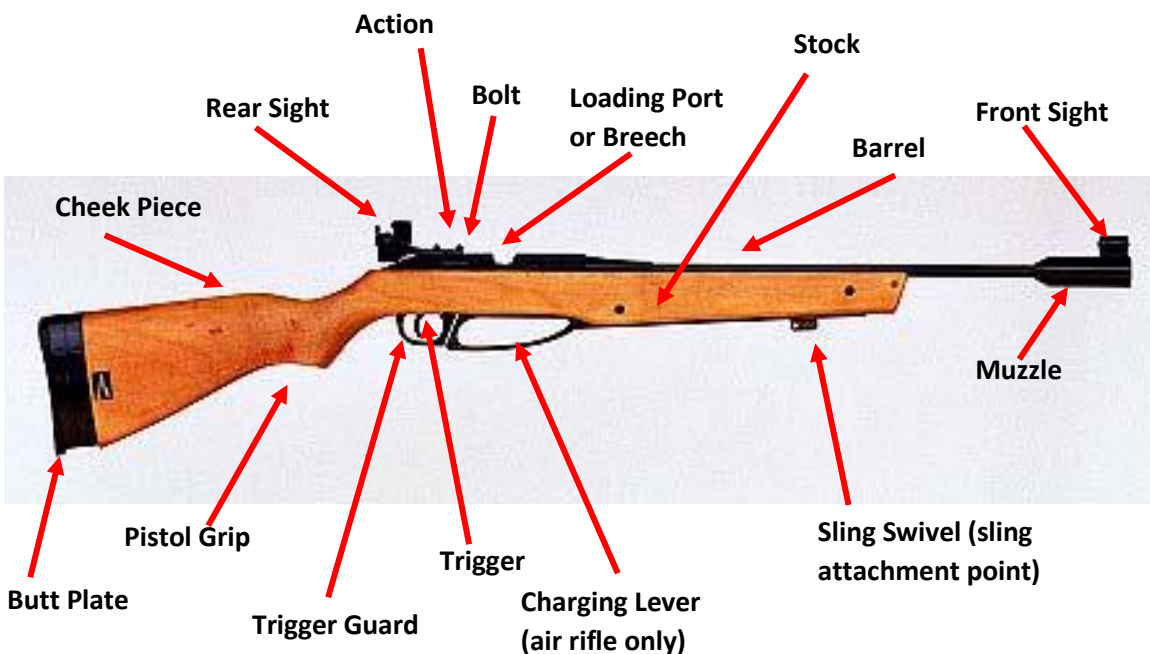
“Marksmanship Fundamentals” are simply the core concepts that, put together, allow you to be able to accurately fire a rifle to hit a target. They include stance, aiming, breath control, and trigger control. We’ll discuss each separately.

What the marksmanship fundamentals give you is an understanding of the process of firing a rifle, and of the major goal in placing a bullet on target: **steady rifle** and **accurate site picture**. Without either of these, your firing will be erratic and unpredictable, and you won’t often be successful in hitting your target where you want to.

Properly implementing the prone, kneeling, or standing positions, along with breath and trigger control give you the best chance of having a steady rifle. Keeping the rifle steady gives you a stable platform from which to launch your bullet. We will look at the positions, and how to best keep the rifle steady in some detail in later lessons.

Understanding what the site picture is supposed to look like and ensuring that you’re modeling that is the second part of accurate rifle fire. It’s not difficult, but can be incorrectly applied. That, or having a weapon that is not zeroed, will prevent you from hitting the target.

You should be familiar with the names of the parts of an air rifle or smallbore rifle. Study the following and be able to name the parts of a rifle: (US Army Cadet Command) (Fenning, 2012)



B2. Steadying the Rifle & Firing Positions

To qualify in the Cadet Corps, high school age cadets (Senior Division) fire from three different positions: prone, kneeling, and standing. Middle school cadets (Junior Division) qualify from only the prone

position. We will examine these three positions, and how to properly use them to most accurately fire a rifle. The positions are designed to challenge your ability to fire a rifle in different ways, and are used throughout the world in marksmanship competitions and the Olympics.

Each of the three positions used in marksmanship provide a somewhat steady platform, formed by your body, from which to fire a rifle. There are standards you must meet, but all are somewhat flexible, and you're able, to some extent, to adapt the position to what works best for you. The important thing to know is what is and is not allowed by the rules you fall under (NRA, CMP, etc.), and what works best for you to maintain a steady rifle that doesn't move (too much) when you're aiming it at a target.

Are you a left-handed or right-handed shooter? It has less to do with whether you are left- or right-handed, and more to do with which eye is dominant. You should shoot from the same shoulder as your dominant eye. To determine which of your eyes is dominant, cut a ½" hole in an index card or piece of paper; hold it out in front of you, and focus on an object that you can see with both eyes open. Now slowly bring the paper toward your eyes, keeping focused on the object. It will end up at your dominant eye.

Most people share eye dominance with hand dominance. Those who don't are called cross dominant. If you're right-handed and left eye dominant, try shooting from the left shoulder. If you just aren't comfortable holding a rifle on the left shoulder, you can shoot right-handed, but you need to put a blinder on the rear site to block the view of your dominant eye. This allows the eye that is used for aiming to focus on the rifle sights.

B2 (a): The Prone Firing Position:



The prone position is used by both senior and junior division cadets. It is the steadiest of the three positions, both because you have more contact points on the unmoving ground and because, in many tournaments you can use a sling to provide more stability.

In your first opportunity to fire a rifle, during the familiarization process, you probably want to fire from the prone supported position. This gives the most stability, and lets you experience shooting at its most basic. Prone supported means that you rest the rifle on a supporting object, such as a sandbag or shooting block. This reduces the movement of the rifle, and allows you to concentrate on aiming, breathing, and trigger squeeze. Prone unsupported takes away the support object, and you control the rifle solely with your body and a sling.

The prone position has the body on the ground (or platform) behind the rifle, head toward the target. The rifle is supported by both hands and your shoulder, and may be further supported by use of a sling. The body is generally lined up with feet spread apart, at about an angle of 10-20 degrees from the line of fire. The right (for right-handed shooters, opposite for lefties) knee is bent, with insoles of the feet on the ground. The left foot may be positioned so the top of the foot is toward the ground. It is often more comfortable to roll the body to the left, which helps take pressure off the chest and abdomen, and relieve the effect breathing has on movement of the rifle. The left elbow is placed on the ground

forward of the head, with pressure pushing toward the back of the elbow. The rifle rests on the left (non-shooting) hand, but the hand doesn't grip the rifle. We'll cover use of a sling later. The butt of the rifle is placed high in the right shoulder, close to the neck. You should be able to look straight forward to see your target. Rest your right cheek along the buttstock behind the rear sight and look through the rear sight to the front sight. Get comfortable so that your head goes naturally to the same position every time.

In the prone position, your left elbow is the pivot point. If you need to adjust your body position to line up with the target, the elbow remains in place and you move your body behind it. (Association, 2019) (US Army Cadet Command)



B2 (b): Use of a Sling:

To provide relief to the supporting arm in the prone unsupported and kneeling positions, it is common to use a sling. Proper use of a sling is vital to success - you will not fire as well without it. The prone and kneeling positions require the shooter to support the entire weight of the rifle with the left arm, which is stretched out in front of the shooter. Without a sling, the muscles in the left arm must hold the rifle in position, but with a sling the weight of the rifle is transferred to the shooter's skeleton, allowing the muscles in the arm to relax. (Fenning, 2012)

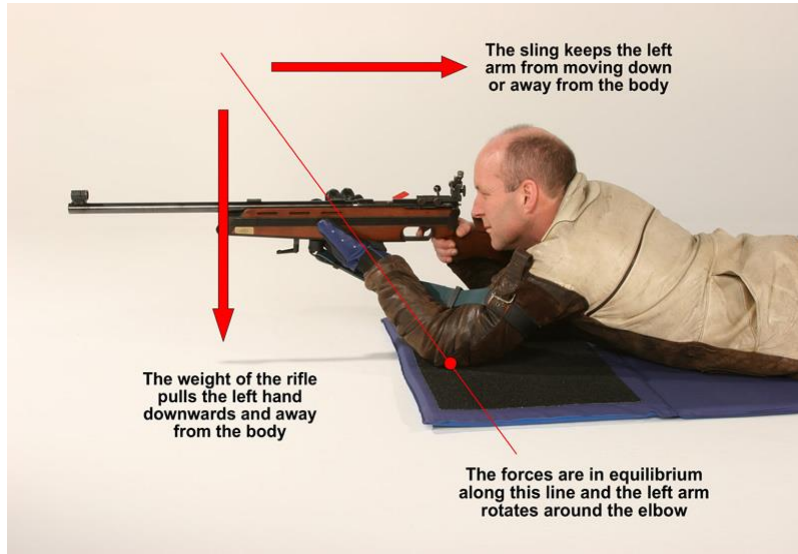


Photo: (Fenning, 2012)

The sling is secured around the left upper arm (or right arm for left-handed shooters), and may be attached to the shooting coat if worn. The other end goes through an attachment to the rifle that can be adjusted along the stock of the rifle so that it is directly in front of the left hand.



Extend the sling and rotate the sling swivel one-half turn to the right (clockwise)



To properly place the arm in the sling, extend the arm and then rotate it clockwise around the sling so that the hand rests between the sling and fore end. The sling should pass around the back of the hand.



With the left hand in position, move the sling attachment point or sling swivel back to the hand and tighten it in place.



Finish the sling adjustment by tightening the sling until the sling and not the left arm muscles, do the work of holding up the rifle.

Photos and text: (US Army Cadet Command)

B2 (c): The Kneeling Firing Position:

In the kneeling firing position, the shooter kneels to sit on the right foot that is supported by a kneeling roll. The rifle is supported by the sling and left arm that rests on the left leg (right leg for left-handed shooters). (US Army Cadet Command) The elbow of the trigger arm will be free from all support. One knee must be touching the ground or shooting mat. The shooter may be on all, partially on, or all off the shooting mat.

Diagram: NRA



The **kneeling roll** is a cylindrical cushion, maximum dimensions of 9 ¾ inches long (25 cm) and ~7 inches in diameter (18 cm). It is made of soft, flexible material. It may be placed under the instep provided the foot is placed toe down at an angle not greater than 45 degrees from the vertical. Only the trousers and underclothing may be worn between the shooter's buttocks and heel. The jacket or other article may not be placed between these two points. If the kneeling roll is not used, the foot may be positioned at any angle, to include placing the side of the foot and the lower leg in contact with the ground. Reverse procedure for left hand shooters. (Association, 2019)



Photo: (US Army Cadet Command)

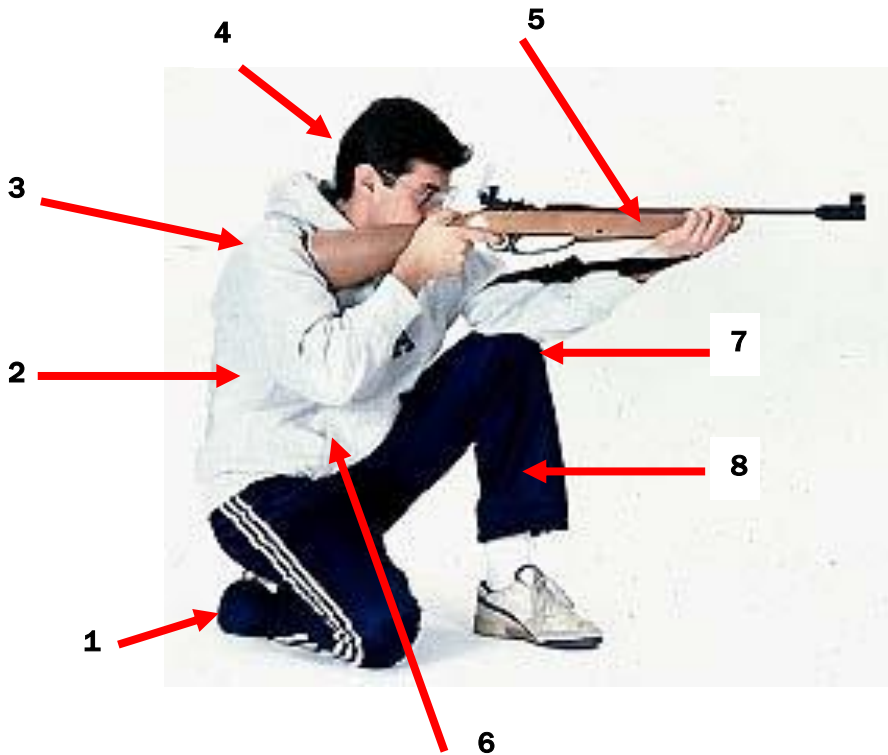
Keep the weight back on the heel, but roll the shoulders forward

Keep the left lower leg vertical or angled slightly forward



Place your left elbow on the knee or just behind the knee

Photo: (US Army Cadet Command)



Kneeling position features that are marked with arrows are:

1. Foot is placed on a kneeling roll. The kneeling roll allows the shooter to comfortably sit on the foot for long periods.
2. Almost all of the weight of the shooter's body rests on the heel.
3. The torso is fairly erect, but the shoulders are rolled forward. The shoulders are not erect, but instead are rolled forward or slumped down.
4. The head is fairly erect. It is tipped toward the target, but not to the right.
5. The support hand (left hand) location is far enough back on the fore end to place the rifle fairly high in the shoulder and keep the head erect. The sling supports the weight of the rifle.
6. The body is turned 30-45 degrees away from the target.
7. The elbow of the support (left) arm is located on top of the knee. Other successful shooters place the left elbow just behind the knee. The elbow is normally not placed ahead of the knee.
8. The left lower leg that supports the rifle (left leg) is vertical. Some shooters move the left foot farther forward so that the foot is slightly in front of a point directly below the knee. The foot is never pulled back so that it is behind this point. (US Army Cadet Command)

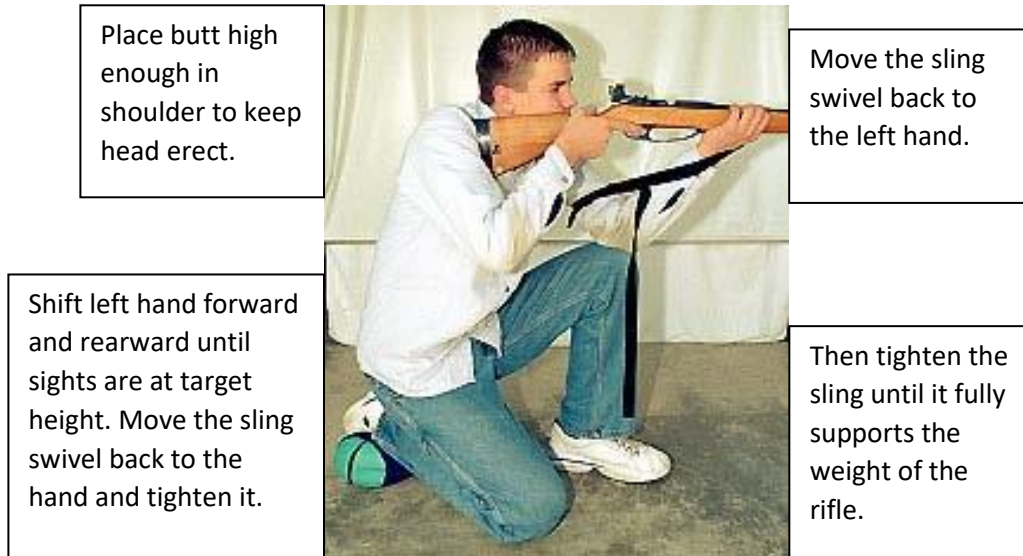


Photo and Text: (US Army Cadet Command)

As you make dry and live fire shots in the kneeling position, think about your position to be sure 1) your body weight is resting on your heel, 2) your left lower leg is vertical, 3) your left elbow rests on your left knee or upper leg just above the knee, and 4) your sling is tight enough to fully support the weight of the rifle. (US Army Cadet Command)

B2 (d): The Standing Firing Position:

The shooter stands free with both feet on the ground, about shoulder width apart, with feet and body facing at least 90 degrees away from the target. The left side points toward the target (reverse for left-handed shooters). Both legs and knees are straight, with leg muscles relaxed (not tense).

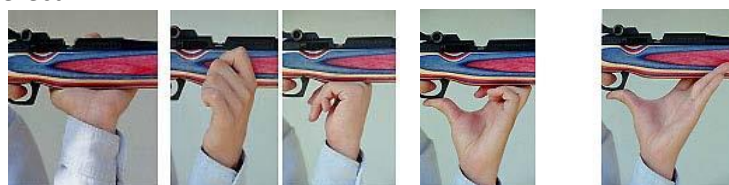


The rifle is held with both hands and the shoulder (upper right chest) or the upper arm near the shoulder, the cheek and the part of the chest next to the right shoulder. The left upper arm and elbow is tucked into the left side directly under the rifle. The elbow can rest on the hip, or the arm can rest on the side, but it must always be directly under the rifle.



The rifle rests on the left hand, fingers, or fist. The correct hand position for you is the one that raises the rifle up to the level of your eye and the target. This is dependent on the lengths of your arms and torso, and differs for every shooter.

The rifle should be placed fairly high in the shoulder so that the head can be kept nearly erect.

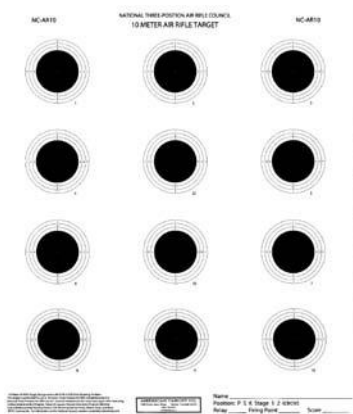


Photos & Text: (US Army Cadet Command)

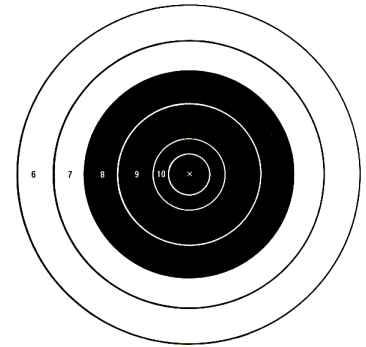
B3. Aiming, Sights, and Zeroing the Rifle

While holding the rifle with the right body position that gives it the most stability is key to accuracy, the sight picture is just as important. Correct sight picture, along with consistency and steady rifle position, will help you keep your shot group small and focused on the bullseye!

What are you shooting at? Usually, the target consists of a paper containing twelve targets (ten record and two practice targets) on one page. Each target has a bullseye worth 10 points and a series of rings worth less as you get farther from the bullseye.



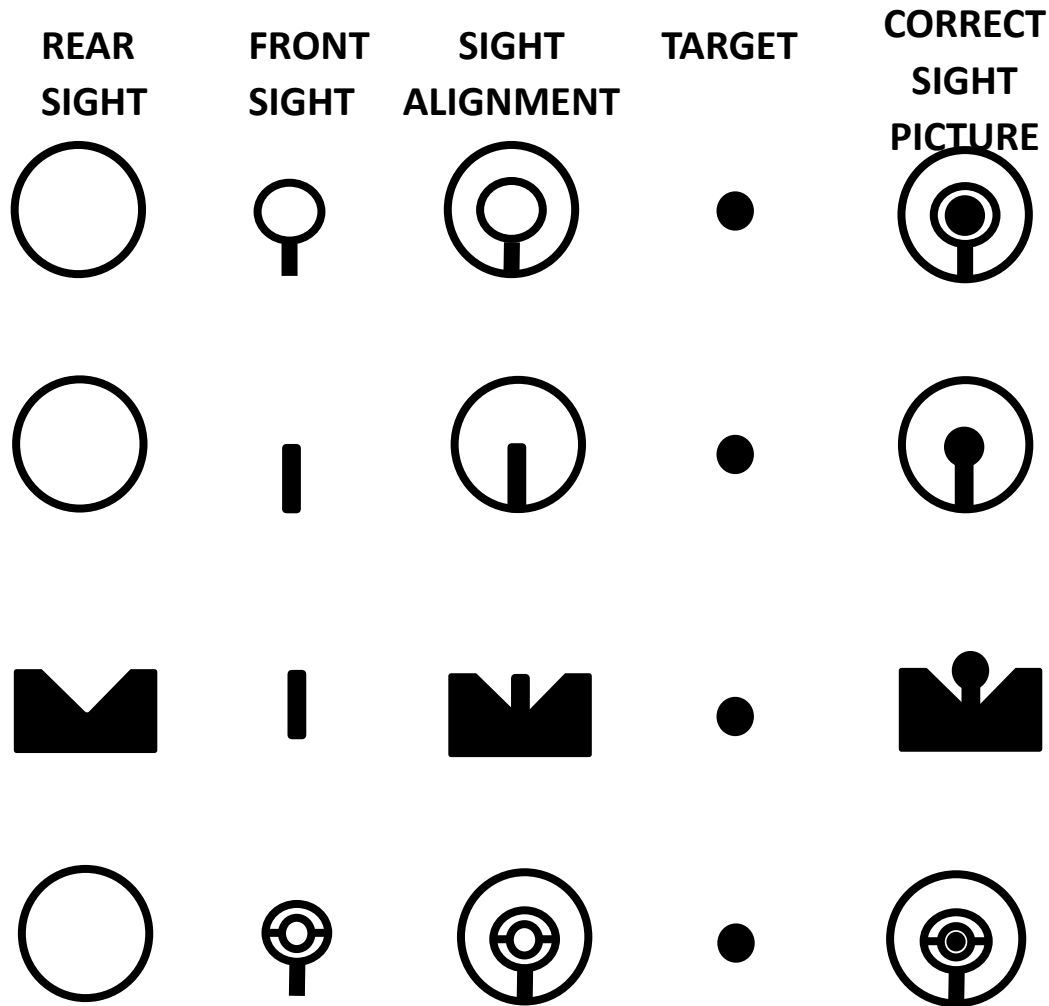
Though many rifles are similar, there are slight differences (and sometimes major differences) from rifle to rifle as to what the sights look like. We will discuss the common sights, but the theory holds true for other sight designs as well. You should be able to use any sight once you know how to form a good sight picture.



Rifles use two sights - a front sight and a rear sight - to allow the shooter to aim the rifle at a target. If the rifle is lined up exactly, and the sights are adjusted perfectly to the shooter's aim, and the rifle doesn't move when fired, then the shot will hit where it's being aimed.

Of course, it's difficult to be exact, perfect, and unmoving - that's what makes marksmanship a challenge!

The first step in attaining a complete sight picture is to align the sights. The shooter looks through the rear sight, which is usually a simple circle, to the front sight. The front sight may be another circle, or may be a post of some type. The goal is to center the front sight dead-center of the rear sight's circle, and to place the aiming point of the front sight on the target. If the front sight is also a circle, that means you want to put the target's bullseye in the center of the circular aperture of the front sight, which is centered in the circular aperture of the rear sight, as shown in the diagram. If the front site is a post, you want to put the top of the post in the middle (center of mass) of the target's bullseye.



Of course, this isn't easy. It's best to get used to a proper sight picture by firing in the prone supported position. That way, you don't have to focus on steadying the rifle, and can just focus on sight picture (and breathing, which we'll get to next). Once getting a proper sight picture begins to make sense, you can get ready to fire from an unsupported position.

So your sight picture has three elements to it - the rear sight, the front sight, and the target. Obviously, you can really only focus on one of the three, and that's the front sight. Your eye should be very close to the rear sight - within about 2-3 inches of it. And you should train yourself to put your eye in the same place every time you aim. If your right cheek touches the butt stock just behind the rear sight, it adds consistency to your sight picture. You peer through the (very small hole of) the rear sight, and center the front sight within the rear sight, and on the target. The target will be slightly blurry, and the rear sight will be blurry - you can only focus on one spot at a time.

When you're aiming an unsupported rifle (and at the beginning, even a supported rifle), you will have a lot of difficulty in controlling the movement. If you tracked the movement of your sights, it might look something like this:



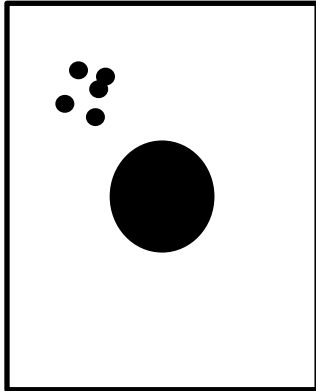
As you practice and gain experience, the trace of the movement will become smaller, as your aim focuses more on the center of the target. Champion shooters keep the movement within the inner ring of the bullseye. For beginners, you likely won't even keep it in the black middle of the target. So how do you fire? Focus on the fundamentals. Control the movement as much as you can. Control your breathing. Squeeze - don't jerk - the trigger. Avoid the instinct to jerk the trigger just as the aiming point seems to be passing through the target. Just keep consistent and do it the same way every time, and your results will be more consistent too.

Zeroing your Rifle.

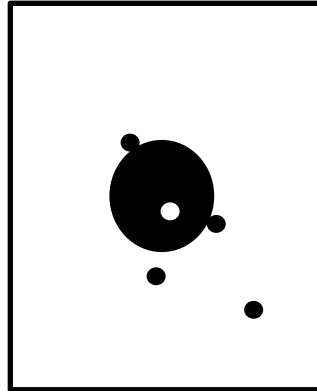
Just in case keeping the rifle absolutely steady and getting a proper sight picture isn't enough, we need to consider the fact that different people have different shooting habits and methods, and their results from the *same rifle* may differ. You can get great results from a rifle as long as you're consistent. Part of this consistency is ensuring the rifle is set up for **your** habits. For this reason, the sights on a rifle are adjustable - they move vertically and horizontally. You "zero" the rifle by adjusting the sights so that when you fire correctly, the bullet hits the bullseye.

You make these adjustments by firing groups of shots - usually five - with as little distraction as possible. You zero in a supported position, and focus on sight picture and breathing. Once you have a 'shot group' that tells you where the sights on the rifle are pointing when you're firing it, you move the sights so that it's pointing to the bullseye.

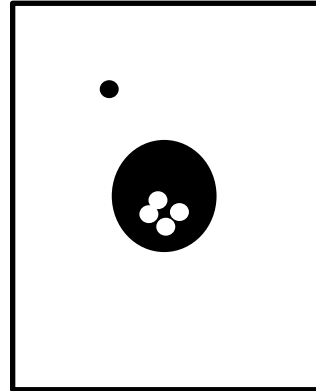
Let's say, for example, that you fire your shot group, and all the shots are fairly close to each other, but to the right and above the bullseye on the target. You want to adjust the sights down and to the left. If you're not able to get your shots in a fairly tight group, this process doesn't really work. You can adjust the sights all day - if your marksmanship skills haven't developed to the point where you can be fairly consistent, your hits will be all over the target. If this is the case, just focus on the fundamentals and getting comfortable firing. You'll just need to practice, with the goal of getting your shots into a tighter grouping.



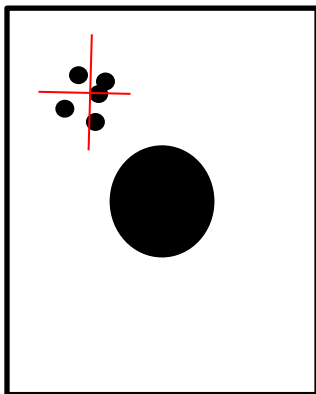
Excellent shot group. Indicates good shooting performance



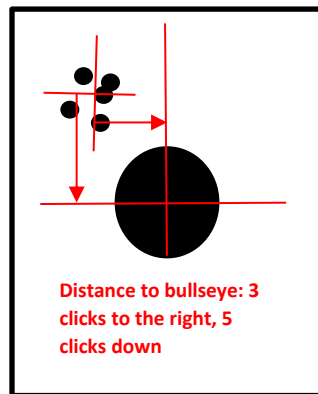
Shots spread out – need to improve consistency



Good solid shot group, with a 'flier' – one shot that indicates a mistake in technique



Draw lines through center of main part of group (disregard fliers if they exist).



Determine distance in clicks (depends on sight system used) to bullseye



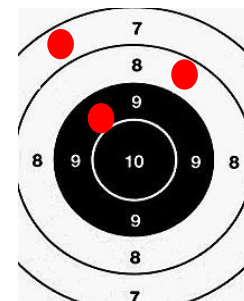
Photo: US Army Cadet Command

Different sights work differently, but basically you turn the elevation and windage knobs the number of clicks you need to adjust to the bullseye

If your positioning and firing technique remains the same, your zero (how the rifle sights work for you) will remain the same. If your shooting techniques change, you may need to re-zero. It's easy to tell by examining where your shot groups are falling on the target.

Scoring.

Once you have the rifle adjusted to your shooting, you can start to fire at and score targets. Targets are pretty easy to score. The hit receives the number of points shown in the ring where it hits. If a shot hits on the seven ring, it scores seven points. If a shot touches, even by just a little bit, the line of a ring, it is scored the same as if it were within that ring.



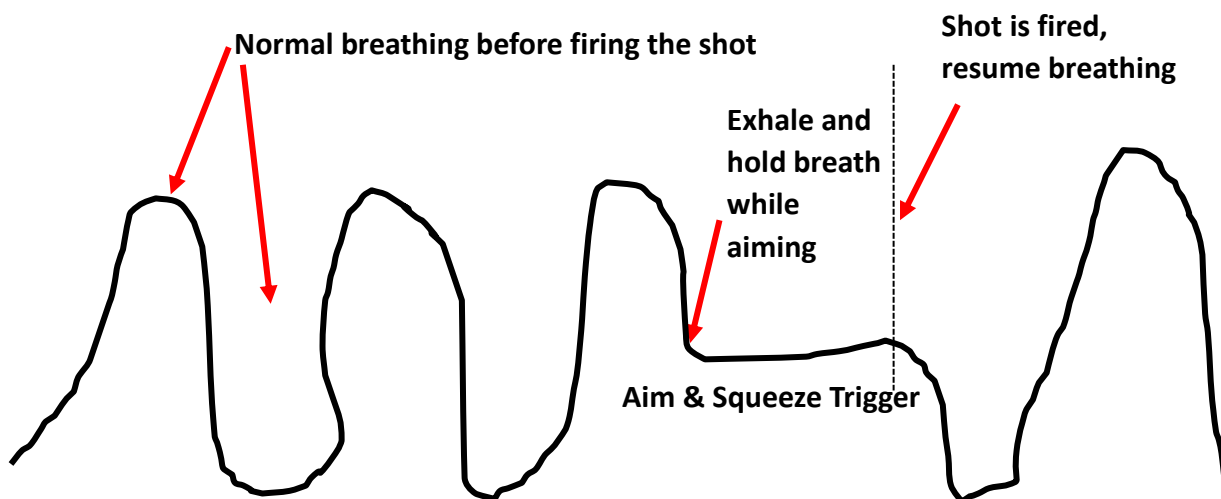
Hits score 7, 8, and 10 points.

B4. Breath Control

Your body is a living entity, and is never completely still. Breathing alone is causing your body to move all the time, and you're usually not even aware of it. In marksmanship, that movement makes the difference between hitting and missing your target. Breath control is one of the things you need to learn to become a good shooter.

Take a few deep breaths. What does your body do when you breathe? Your chest and abdomen tend to expand, and sometimes your head and shoulders rise too. If you're in a prone firing position, that movement will certainly move the rifle, and ruin your shot. To shoot a rifle accurately, you must stop breathing to fire. Generally, you should be able to stop breathing, aim, and fire, then resume breathing, without getting too oxygen deprived.

You don't want to take a deep breath and hold it - that act alone throws your body off, and is hard to control. You want to breathe normally, calming your whole body, pause as you exhale, hold your breath while you aim and fire, then calmly resume breathing. Don't empty your lungs - you don't want to be deprived of oxygen when you're holding your breath. Your breathing should look something like this:



One way to minimize the movement in the rifle when breathing is to raise the right knee (for a right-handed shooter) when firing in the prone position. This has the effect of raising the diaphragm allowing for expansion and contraction of the lungs without the body lifting significantly up and down. (Fenning, 2012)

B5. Trigger Control

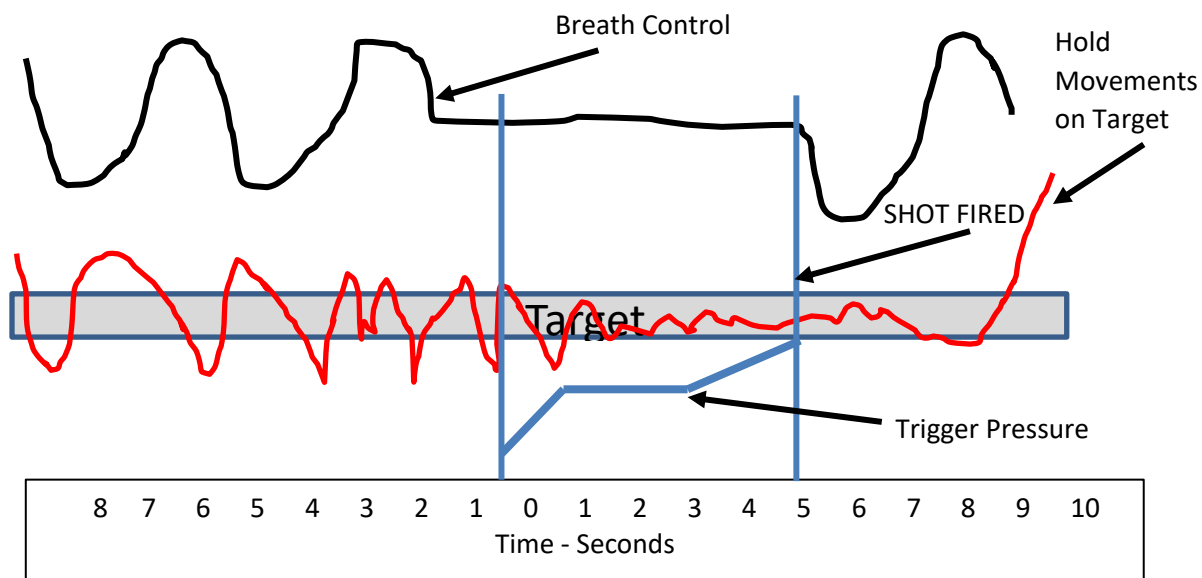
The last marksmanship fundamental we'll cover is trigger control. It seems like a minor detail, but how you pull the trigger can cause the rifle to move slightly - and that will definitely affect on targeting and where the shot hits.

First, where should your finger be on the trigger? Some of that depends on how sensitive the trigger is. Normally, you should use the fleshy part of your first finger joint to pull the trigger. Not the very tip of the finger, but the fleshy part about ½ inch from the tip. If the trigger is really hard to pull, you might

need to use the joint of the finger instead of the pad. Generally, the pad of the index finger will give you more feeling. You want to slowly and steadily apply pressure on the trigger until the rifle fires, then keep the trigger squeezed for a short period before releasing it. This 'follow through' control avoids more movement of the rifle, which could throw off your shot. A common mistake for beginners is to squeeze the trigger too fast and too hard followed by immediately releasing the trigger which is often accompanied by a movement of the head away from the sights. (Fenning, 2012). Keep squeezing the trigger for a short time after the shot, then resume breathing and release the trigger. This is Follow Through.

If your shots are dispersed horizontally, it is probably due to jerking of the trigger. If your shots are dispersed vertically, it is probably due to lack of breath control.

Here's a graphic representation of the different elements or techniques of firing the shot and how they are coordinated during the 15-20 second period when the shot is fired: (US Army Cadet Command)



B6. Familiarization and Qualification

The best way to learn how to shoot is to practice. It takes a little bit of knowledge - understanding the marksmanship fundamentals - and a lot of practice.

The marksmanship program in the California Cadet Corps is an orientation to the sport of marksmanship. Now that you've learned the basics of firearms safety, and have been introduced to the fundamentals of shooting, you're ready to see how good you are at it. Depending on your school and commandant, you will have the chance to shoot an air rifle or .22 caliber smallbore rifle. When you're shooting for practice, we call it familiarization. You should have the chance to put what you've learned into practice, at least in the prone position, and potentially kneeling and standing too.

The next step, once you've learned to shoot, is qualification. Either at your school, during a bivouac, or at a summer encampment, you can shoot a qualification course (some schools and districts prohibit marksmanship, so you'll need to check your school's policy). This consists of firing 30 shots. Cadets in the senior division (9th grade and higher) fire 10 shots each in the prone, kneeling, and standing positions. The course for smallbore rifle shall consist of 30 shots, 10 each on prone, kneeling, and standing. The course for air rifle shall consist of 30 shots, 10 each on prone, standing, and kneeling, in that order.

For smallbore rifle courses, the range uses NRA Rules. They are available on line, and are updated periodically. You get one minute per shot for prone and kneeling, and 90 seconds per shot for standing, with five minutes allowed for position and target change between positions. Total time for a course of fire for smallbore rifles is 45 minutes.

For air rifles, Civilian Marksmanship Program (CMP) Rules should be followed. They are available on line, and are updated periodically. CMP uses a Preparation and Sighting Stage of 8 minutes, time for record fire of one minute per shot (90 seconds in the standing position), time for changing positions of five minutes, and five more minutes for sighting in the new position. Total time for a course of fire for air rifles is 63 minutes.

Time is not checked on each shot. The total time allotted per shot and position change is monitored. If all the firers complete the course of fire prior to the time running out, the range officer may move on to the next course of fire.

Each of the 30 shots yields a possible score of 10 points with a grand total possible for all three positions of 300 points.

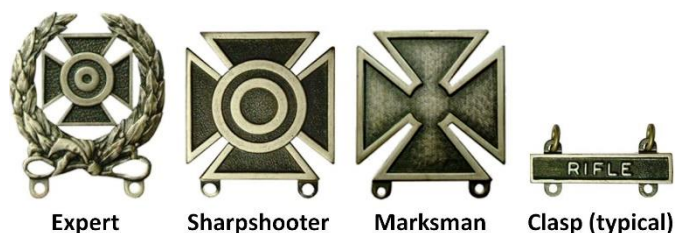
For Junior Division (cadets enrolled in grades 8 and below), the course of fire consists of 30 shots from the prone position, with a time limit of 38 minutes and a possible score of 300 points. The same course of fire is used for smallbore and air rifles.

To earn a marksmanship badge, you must meet the following standards:

Marksman: 165 out of 300 points (55%)

Sharpshooter: 195 out of 300 points (65%)

Expert: 240 out of 300 points (80%)



Cadets may have the opportunity to qualify in the US Army Engagement Skills Trainer (EST). This is a fully operational simulator designed to provide training on marksmanship to Army soldiers in individual and unit collective situations. In addition to individual marksmanship simulation, it includes situational escalation of force exercises.

The EST, or upgraded EST II, allows cadets to fire simulated M4 rifles in a realistic range-based scenario. The program provides diagnostics that help the cadet and coach assess the shooter's use of marksmanship fundamentals. In addition to excellent marksmanship training, the program can also be used as a qualification course.

To qualify using the EST, California Cadet Corps cadets must achieve the following:

Junior Division—40 shots from the prone supported position to “pop up targets” from varying distances on the screen as prescribed by the Army's course of fire.

- a) Marksman = 23-29 “hits” out of 40
- b) Sharpshooter = 30-35 “hits” out of 40
- c) Expert = 36 or more “hits” out of 40

Senior Division – 20 shots from the prone supported position, 10 shots from the prone unsupported position, and 10 shots from the kneeling position on “pop up targets” from varying distances on the screen as prescribed by the Army's course of fire.

- a) Marksman = 23-29 “hits” out of 40
- b) Sharpshooter = 30-35 “hits” out of 40
- c) Expert = 36 or more “hits” out of 40

If you complete a marksmanship training program of no less than 16 hours, you may be awarded the Marksmanship Training Ribbon. If you compete in state-level rifle matches, there are other awards available as covered in Cadet Regulation 1-1.

Marksmanship in the California Cadet Corps is discussed in Cadet Regulation 3-17.

Whether or not you're able to shoot or join a rifle team at school, there are rifle clubs in most communities that you can join (with your parent's permission). If you like marksmanship and want to pursue it as a hobby, check out a local club! Clubs sponsor individuals and teams who compete in tournaments and competitions.

References

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