

Home Firearms Range Best Practices for Safe Use and Design

This presentation will separate safe use and design of a home firearms range into two sections:

- 1) Shooter safety
- 2) Range safety

Both are integral parts of the whole equation, relying on each other to ensure a safe environment for all.

The information presented here may be found in various publications throughout the firearms industry. Anyone interested in shooter or range safety may contact the National Rifle Association, the National Shooting Sports Foundation, the United States Concealed Carry Association, a certified shooting instructor or range safety officer, or a hunter education/firearms safety program.

The suggestions herein are the most common. Many people may have additional ideas that can be effective as well.

Shooter Safety

The number one safety feature on any range is the shooter. It is imperative that they are knowledgeable in the basic rules of safe shooting. The National Rifle Association lists three rules for safe gun handling (NRA Basics of Pistol Shooting textbook, pp. 12-13). They are:

- 1) **Always keep the gun pointed in a safe direction.** This means the gun is to be pointed downrange, towards the target. An exception may be when loading or unloading a revolver. This requires pointing at the ground to load and the sky to unload, assuming all other safety measures are met. It should be noted that handling a firearm may occur in locations other than a range, such as removing it from a safe in one's home, or placing it in a holster on one's belt. In these situations, the person handling the gun must determine a safe direction based upon the surrounding area.
- 2) **Always keep your finger off the trigger until ready to shoot.** At no time other than when a gun is pointed at a target the shooter intends to engage, should their finger be on the trigger. This can prevent unintended discharges, both on the range and in the home. For example, if a gun owner keeps their finger in the trigger guard when holstering or unholstering a handgun, they may cause an unintended discharge that can hit their leg.
- 3) **Always keep the gun unloaded until ready to use.** Many people place their firearms on a range bench or table. Under no circumstances should it be loaded while lying there. It should only be loaded after picking it up to shoot, and unloaded prior to returning it to the bench. The gun should also be left open when on a bench or table, so that all present can see that it is unloaded.

This will render it inoperable in case a round was left in the chamber.

These three rules of safe gun handling are designed to keep the shooter and all those nearby safe, even if one of them fails. There is a fourth rule to note (NRA Basics of Pistol Shooting textbook, p. 15):

Know your target and what is beyond. This instructs the shooter and any spectators to watch the target area and anything beyond, ensuring that no people, animals, structures, or other unintended targets are in danger. As many home shooting ranges are directed towards a wooded area, it is possible for people, wildlife, or domestic animals to travel into the bullet impact area and what is beyond, at an inopportune time, without realizing what they are doing. All people on the range, even if they are not shooting, have a responsibility to watch for this.

Other safety items a shooter must address include, but are not limited to (NRA Basics of Pistol Shooting textbook, pp. 15-17):

- 1) Ensure the safe mechanical condition of all firearms.
- 2) Ensure any other shooters on their range follow all safety rules and procedures.
- 3) Ensure they are physically able to operate a firearm.
- 4) Ensure everyone on the range uses eye and ear protection at all times, even when not shooting.
- 5) Ensure that no one is under the influence of any substance that would cause them to be dangerous while handling a firearm. This includes, alcohol, illegal/illicit, prescription, over the counter, or recreational/medicinal drugs.

Range Safety

There are a number of considerations in constructing a range. Each factor plays an important role to ensure a safe yet fun shooting experience. This information may be found in the National Rifle Association Range Source Book (RSB), Section II, Chapter 9 pp.129-139.

- 1) Range orientation:** The direction of fire should be toward an area that is away from any people, animals (domestic or wild-unless hunting) buildings, structures, vehicles, pools, backyard playsets, or areas that may be expected to be used for outdoor activities by others. Additionally, a shooting station should be forward of anything that should not be shot if a bullet were to travel sideways from the station. The shooter should be able to look 180 degrees to both their right and left and not see any person, object, area, etc. in which a bullet should not impact. This includes looking beyond their own property lines if the proximity to their neighbor could be a factor.
- 2) Proper backstops:** The most common and, usually, least expensive backstop is an **earthen berm** free of large rocks and other debris that could contribute to a ricochet. It must be of sufficient depth and strength to stop any size projectile the user intends to shoot, either now or in the future. Its height must be sufficient to contain any shot fired from any position the shooter will use. The RSB states that backstops can be up to 20 feet high in some situations. It is important to note that the RSB's primary focus is on commercial or club ranges, where a 20 foot berm may be much more practical than in a backyard range. Backyard berm designs may vary on a case by case basis, with the RSB stating that the size of a range for a

private owner may differ and vary from commercial situations (p.291) . It further states that if there will be a low volume of shooting, perhaps just to sight in a gun for hunting, testing, or making adjustments to it, a 55 gallon drum filled with sand may be a suitable backstop, assuming all other safety rules are followed.

Bullet traps are another form of backstop. They are steel boxes constructed of armor plating and in such a manner as to stop a bullet and collect it in a bin for retrieval and recycling. They are commercially available via a number of manufacturers. Many offer models of the appropriate size for homeowners, but they can range in weight from 150-1100+ pounds and cost several hundred dollars for the smallest ones that only stop .22 caliber rimfire bullets, to several thousand dollars for models that stop large handgun and rifle bullets. Some manufacturers have models of such size and weight that they have wheels attached so that they may be moved into place. Even if a bullet trap is used, it must be considered that the shooter may miss it, with the projectile landing elsewhere. An additional form of backstop placed behind the trap could be warranted. Below are pictures of various bullet traps for reference purposes. An internet search for them will produce several different manufacturers and show what they have to offer.



- 3) **Side berms:** The RSB suggests that side berms, running parallel to the direction of fire, about 8 feet or higher can be used when warranted. This may be easier and more practical for a commercial range to accomplish than a homeowner in their backyard and is not necessary in all cases.

- 4) **Natural contours of the land:** It is possible that the natural contours of the land may form a suitable backstop. This, of course, will have to be evaluated on a case by case basis.

- 5) **Space for shooting station:** The RSB suggests that a shooting area have such space as to allow the shooter to move freely while handling a firearm. This will vary widely depending upon the style of shooting. A shooter sitting at a stationary bench may require less space than one lying down in the prone

position and rifle shooters may need more space than pistol shooters. The RSB states that 3-6ft for pistols and 6-10ft for rifles may suffice.

- 6) **Range Flags:** A raised red flag at the entrance to a range is a signal that it is active. Alternatively, clubs and commercial ranges can use red lights, or signage for the same purpose. If a homeowner wanted to communicate to others that they are entering an active range, they could put signage in place around the bullet impact areas and beyond. A red flag could be raised from either a pole or a tree in the woods, however, its meaning may not be realized by someone unfamiliar with firearms safety.

- 7) **Sound abatement:** Distance is likely the easiest and most readily available sound abatement technique for a home range. The RSB (p. 92) states that “The sound of gunfire decreases by 10 dB for each doubling of distance from the shooting range.” This indicates that placing the shooting station as far from a neighboring property as practicable could help to curb noise issues. The surrounding environment may contribute to sound abatement, as well. Vegetation such as trees, bushes, and shrubs may block or soften some of the sound from a range. The natural contours of the land may also help, especially if there are hilly areas that can absorb or redirect the sound.

- 8) **Emergency Procedures:** It is important for any range, whether club, commercial, or home to be prepared for an emergency. Minor issues such as small cuts or abrasions may be tended to

with simple first aid techniques. More serious problems such as gunshot wounds should be planned for as well. A first aid/trauma kit should be readily available to those on the range. In addition to supplies that can be found in basic first aid kits, items that can quickly stop bleeding in case of a gunshot wound should be included. Tourniquets and clotting compounds sold under various names are recommended. Use of these items is dependent upon an individual's level of training and ability to do so. If it becomes necessary to call first responders to a range, it is imperative to make sure they have unimpeded access to it. If a home range is in a fenced backyard someone must make sure the gate is unlocked and open. If the range is further into the woods and perhaps not close to or visible from the house, someone must wait by the road for first responders to lead them to the range. When building such a range, the homeowner might consider ensuring a path of suitable size for emergency response. If the call for help is made by someone other than the residents of the home in which the range is located, such as a spectator or friend invited there to shoot, it is important for them to know the exact address so that they are able to tell responders where to go. A sign or sticker on the shooting bench, a tree, or a post, is good practice to this end.

Respectfully Submitted,

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