

Introduction

Discussions on handgun wounding factors often involve lore and become anecdotal. Much of what is said compares apples to oranges. The search for facts is clouded with bad, often dangerous, information and advice.

One does not have to look long to find video examples of the wounded continuing an attack. Likewise, there are examples of attackers dropping in their tracks. These can not be attributed simply to a caliber or bullet type nor to accuracy.

There are simply too many factors to consider — the reader is asked to set aside preferences and preconceived notions and consider the entirety of the following.

To be credible in this field, not only is experience required, but there must be an understanding of the physics involved.

This document started out to be a discussion of the physical factors associated with ballistics for the purpose of educating those licensed to carry so that they could avoid ineffective cartridges. It quickly changed to include human factors and anyone carrying for the purpose of self defense.

Lastly of the first, the following is not gender neutral — males and females are not the same, and they typically face different threats. On average, males can manage larger and more complicated weapons simply because they have more strength and their hands are larger. Males are not likely to be stalked for a rape. God bless women who can handle a 1911.

When and Why

If you don't have "when" and "why" sorted out in your head, you are not ready to carry a firearm.

I often hear questions, even from those licensed to carry, that make me question whether they are ready. Don't ask about scenarios. The force we are authorized to use is deadly — if deadly force is not justified, don't shoot. If deadly force is authorized — judiciously shoot.

Authorized? Forget the law and its nuances — only use deadly force to defend your life or the life of another. If this is your rule, you are justified and you are legal — always!

Yes, there may be laws on the books about shooting a fleeing felon or to prevent arson. Those are judgement calls, and the law varies from State to State. If you are carrying with a mindset to enforce this type of law, consider becoming a LEO. Police and Grand Juries hate wannabe's.

Remember this; Grand Juries have been known to indict a burrito¹.

If after reading the above you have a hypothetical question, you are not ready to accept LTC responsibility.

Factors to be Considered - Reliability, Operability, and Applicability

To carry confidently, you must be confident the weapon will function on demand every time. Be familiar with its operation and have confidence that you have the right tool for the job.

Reliability

Function on demand! There is no dream that will wake you faster than to have your firearm not function or have no effect. There are several manufacturers that have a well-deserved reputation for producing reliable firearms. There are others with a well-deserved bad reputation. Purchase reliable, but this is half the equation.

¹ U.S. District Judge David Counts, Quiroz vs ATF.

Handgun Wounding Factors for LTC

Ammunition can be a problem. Only use ammo that functions well in your firearm. Use ammo that you have used at the range (at least in part) so that you can be confident that the ammo works as intended in the weapon that you carry. If a round fails that can not be attributed to the firearm, consider that lot 'range ammo'. Note; never use penetrating oils such as WD-40 on a firearm. It penetrates the primer area and renders the ammo useless.

Operability

You must be comfortable with the way your firearm functions (and malfunctions). This is what range practice is for. There are those who can not operate a pistol reliability. In this case, a revolver is the best choice.²

Applicability

There are firearms that are not applicable to most self defense scenarios. A 22 is an example — a single or two-shot Derringer is another. A revolver with a 410 buckshot load should not be appropriately carried in a shopping mall. Common sense must prevail.

Your weapon has only one purpose — it must stop an action that threatens your life or the life of another. Your weapon is not for scaring them or wounding them in the hope they will run away — they won't. And, there is no such thing as a warning shot.

Factors to be Considered - Human

Self defense has no typical location and no typical time of day. If you think you are safe 'where and when', you can be caught with your guard down. It can be sitting in your vehicle at a stop light; it can be in your home; it can be in a crowded mall or a parking lot. Safety of the innocent is of paramount importance. Bullets do not necessarily stop where you want them to stop.

You can not pick the location. The location picks you, and there is little time to evaluate. I have found that the best way to be prepared is to consider scenarios — there was often a lot of quiet time in a Police vehicle especially when assigned to a one-man unit. I am not saying to focus on, or be obsessed with scenarios, but I am saying that you should occasionally ask yourself, "what if . . .".

"Do I have the right weapon with me?" A scenario could be such that intervention would be inappropriate. An example would be a revolver vs multiple subjects with semi-auto rifles and/or pistols in a crowded area.

Factors to be Considered - the Target

Is he big? Is he 'high'? Is he strong? Is he moving? What's behind him? How close is he?

These factors must be taken into consideration — you have to size-up the situation instantly. A large man is harder to bring down. The same goes for one 'high' on drugs. Can you hit him reliably several times center mass? Is he close enough to overpower you? A handgun is an equalizer but only if used appropriately.

² Know the difference between a pistol and a revolver — both are handguns but they are completely different. A pistol is mechanically more complicated and requires hand strength that some do not possess.

Factors to be Considered - The Bullet

'Knock-down' power is seldom understood. $F = ma$ is fundamental³ in understanding what is not 'knock-down' power. The bullet's mass is minuscule in comparison to the mass of the target. Do the math. A 230-pound man is 7000 times heavier than a 230-grain bullet. The bullet does not materially 'move' the target at any LTC practical handgun velocity.

The bullet's very significant effect is in the volume of traumatized tissue. This can be seen in slo-mo impacts of a bullet into ballistic gel.

Assume two FMJ Ball bullets enter, reach the same depth, but do not exit. They produce a cone shape of disturbed tissue. The difference in the volume of this cone (the temporary trauma) between a .22 and a .45 is a factor of over 4 even though the difference in diameter is essentially 2. In this hypothetical scenario, the 40 S&W cartridge causes 1.26 times more trauma than the 9 mm. The 45 ACP is 11.5 mm. It produces 1.62 times more trauma than the 9 mm and 1.28 times more than the 40 S&W.⁴

The volume of traumatized tissue compared to bullet size is little understood — the volume of traumatized tissue is proportional to 10 times the diameter of the bullet. This makes a very significant difference, a disproportionate difference, in the bullet's effect.

An exit wound means the bullet still has enough energy to send you to jail or get you sued. Again, what is on the other side of your target? Ideally your bullet should cause as much trauma as possible and not leave the target. Fast small bullets do not typically stop. Just because a bullet expands does not mean it will stop and really fast bullets don't expand fully before they exit. Here are factors to consider:

- More bullets are better than less bullets. However, more bullets means a larger handgun that is heavier and difficult to conceal.
- Big bullets are better than small bullets. However, larger bullets means less bullets available given the same sized handgun.
- Fast bullets produce more trauma. However, fast bullets exit the target and still have enough energy to harm the innocent.

There has to be a balance — this is where everyone has an opinion. My advice is to stay between 9 mm and 45 ACP and to always use nothing but personal protection rounds. Consider any law against the use of personal protection bullets void — this is your life we are talking about. Your intent must be twofold; stop the attack effectively and protect the innocent. A PP round is more likely to stop the attacker and stop in the attacker. My personal preference is now the 40 S&W. In my experience, it strikes an acceptable balance. Having said this, advancements in 9mm technology can not be ignored.

Conclusion

If nothing else is accomplished here, I hope that it is understood the complexity of the issues surrounding the use of deadly force, the simplicity of the decision criteria, and the extreme responsibilities you have in this regard. No law is relevant if you are defending your life or the life of another. The right of self-defense is the most important inalienable right that you have.

1. Know your handgun and how to use it effectively
2. Only use your handgun to protect your life or the life of another

If you follow these two rules, then the action you take is defensible.

³ Force is equal to mass times acceleration. The mass of the bullet multiplied by its deceleration in the target is equal to the mass of the target times its associated acceleration.

⁴ Based on bullet diameter after leaving the barrel (land diameter)

Notes and Comments

I have found that the most likely place to hear anecdotal stories is in a LTC class. Some of these stories are based on obscure case law from Timbuktu, NY that have no application. Other stories are based on second or third-hand information. Remember that an expert is defined as "someone from out of town" and especially so if he has an accent. Be your own expert — learn and apply.

Advice? I have heard the most ridiculous advice — yesterday I heard this; "A police officer told me to shoot for their stomach so the recoil will make the bullet hit them in the chest". I've heard "the louder the gun the better — it will scare them away". Everyone has heard this one; "if they fall outside, drag them inside before the police arrive".

There are those who go to a gun shop and reject a handgun saying "it's too heavy". They buy a light weight handgun, go to the range, and complain about recoil. The lighter the gun, the more the recoil. Recoil? Who cares? You only feel recoil at the range — you will not notice it in a gunfight. Do not limit your options based weight or recoil — buy a handgun that will do the job reliably.

Practice at a Range is not aiming at a target — assume there is never enough time to aim (because typically there isn't). If you have time to aim, you may not be justified in pulling the trigger. You must be able to hit your target where it counts by pointing and, you should fully understand your limits. Range practice is familiarization and re-familiarization with your sidearm. Hitting the silhouette center mass must be a given, and it must be done without taking the time required to form a perfect 'sight-picture'. This is not to say that practice does not preclude deliberate well aimed shots, but as speed goes up, accuracy comes down. Well aimed shots must transition to faster good enough shots. LTC practice is not 'target-practice and it is not a contest. Qualification is easy — if you can't get a near perfect score by pointing the weapon then you are not ready.

The Police are not our protectors — they are Law Enforcement Officers. "To Protect and Serve" is a lofty and unachievable goal. Ultimately self defense is your own responsibility. Defense of one's family and one's neighbors is a forgotten male role delegated to the police who are minutes away when seconds count. It is a demonstrable fact that crime-against-the-person is reduced significantly when the public is armed.

"The best lightning rod for your protection is your own spine." — Ralph Waldo Emerson

"God can protect you, but don't be surprised if he hands you a pistol." — James Randolph Lawrence