



SMART HEARING PROTECTION

IN-EAR ELECTRONICS

TIM COOPER

EAR DEFENSE IS SELF-DEFENSE

"Ear pro" has come a long way since the days of yellow foam plugs and bulky earmuffs. Modern in-ear electronic hearing protection offers everything from noise cancellation to noise magnification to Bluetooth connectivity and recharges like a cellphone.





When you're considering firearms and all of the related gear, you can cut some corners to save a few bucks. However, overlooking effective ear protection for range time shouldn't be one of them.

Experts tell us that exposure to even a single gunshot without protection can result in permanent damage, including tinnitus (ringing in the ears) and irreversible hearing loss.

Most gun owners understand that hearing protection is a required component of any range bag. Those who ignore that requirement will not only suffer negative physical consequences but also may experience the embarrassment of being escorted out to the parking lot by a range safety officer.

Hearing-protection products fit into either the active or passive category. An active product has two functions: It passively isolates the ears — just like conventional muffs and foam plugs — and uses electronics to boost ambient audio while filtering out harmful frequencies. Passive protection does not employ electronics. It typically blocks all frequencies, whether harmful or not. While a passive product can be effective and is comparatively inexpensive, it substantially impairs situational awareness.

If protection alone sums up your needs, there's probably no reason to keep reading. Passive protection will certainly serve that purpose. However, digital technology has given shooters some compelling reasons to go electronic. Since I've covered over-the-ear electronic headsets in the past, I'll focus on the advantages of newer active in-ear options.

PROTECTION RATINGS

Before you buy any product — active or passive — to protect your ears, you need to make sure it's rated for gunfire. And let's get this out of the way now: AirPods and other popular electronic earbuds sold at your local consumer electronics store, though they may incorporate noise-canceling technology, are not designed to block the harmful frequencies associated with gunfire.

According to audiologists and U.S. military specifications (MIL-STD-1474E), effective hearing protection for shooters should reduce the peak sound pressure level at the ear below 140 decibels.

However, that safe number applies only to brief impulse noises (short, high-intensity bursts). Commercially available products, including those for shooters, use a different scale — noise-reduction rating (NRR) — to measure average noise reduction across all frequencies for continuous exposure. That's a good thing, as most shooters discharge their firearms many times over the course of a range session.

While mil-spec does not specifically mandate an NRR rating, high-end hearing-protection products approved by the military generally carry an NRR between 25 and 31. It's easy to find affordable civilian options that fall into that same range.

It's probably safe to assume that anything you buy at a gun shop will provide adequate protection, but NRR ratings always assume proper usage. For example, standard foam plugs rated for gunfire can fail miserably if you don't insert them properly.

Other key considerations include the caliber of firearm you regularly shoot and the environment in which you fire it. In most cases, the report from a centerfire rifle is significantly louder than that of a pistol. Likewise, a

gunshot at an indoor range creates more sound pressure than it does in the great wide open.

NICE AND EASY

"Suppressor" in-ear protection from Walker's is available with or without Bluetooth capability. While the latter will save you some money, the ability to connect your ear pro to your phone is exceptionally handy.

WHY GO ELECTRONIC?

Electronics have been used to supplement hearing protection for shooters since the late 1980s. However, these products didn't gain popularity with civilians until they became affordable in the mid-1990s.

While the concept hasn't changed dramatically since then, chip miniaturization and microprocessor technology now make it possible to pack these features into a tiny, earbud-style format that's "smarter" and more convenient than older over-ear models.

Passive protection is always in place to protect a shooter's ears if battery-backed

ELLIOTT EAR PROTECTORS

■ In August 1903, James Albert Riley Elliott, a professional shooting representative of the Winchester Repeating Arms Co. and a champion live-bird shooter, filed a patent for an eardrum protector designed to “protect the drum of the ear from excessive air waves or pressure due to the concussion caused by the discharge of firearms or other causes and yet permit sound waves to reach the eardrum.”

The hearing protection consisted of a ball that filled the entrance of a user’s ear canal. A crescent-shaped body, attached to the ball by a stem, fit into the fold of the outer ear to hold it firmly in place. The length could be adjusted by screwing or unscrewing the stem from the ball, allowing the user to fit the device comfortably into the fold of the outer ear. A small opening in the crescent-shaped body, a small passageway cut in the stem and a recess in the ball permitted verbal, bugle and whistle signals to pass through while at the same time preventing injury to the ear.

While a long way from the electronic innovations in hearing protection Cooper discusses, Elliott’s simple but novel design offered protection to soldiers and sailors, miners, shooters, and others. It was an improvement over wool or modeling wax, which left sticky residue, and hard vulcanite protectors, which caused inflammation.

In his 1919 book *The Modern Pistol and How to Shoot It*, Olympian Walter W. Winans claimed that the Elliott Ear Protectors “reduce the noise of a heavy express rifle to a mere thump, like striking the fist on a wooden table,” while still permitting a small amount of sound to pass through the ear canal. He tried all kinds of hearing protection, but Elliott’s design, further improved in 1911, was the only one which he “found of any use.”

The Arizona State Bureau of Mines, promoting Elliott’s design, extolled the value of hearing protection in the September 1916 issue of *State Safety News*.

“When the expense of disability is considered,” it said, “the cost of ear protection is infinitesimal.”

The maxim still rings true for modern shooters.

— **Frank Jastrzembski, Contributing Editor**

active protection fails. When the active system is on, external stereo microphones pick up audio — such as voices, footsteps and animal sounds — from the surrounding area, while amplified speakers boost the audio. This detailed audio can be better than natural hearing and can help enhance your 360-degree situational awareness. A microchip constantly monitors the incoming audio and instantly cancels anything over 82 decibels.

One of the more obvious advantages of the modern, compact designs is improved cheek weld for shotgun and rifle shooters. Anyone who’s tried to sight in a scope while wearing bulky muffs knows exactly what I mean. The ear cups can make it very difficult to get your eye properly positioned behind the glass.

However, firearms enthusiasts may also find value in the high-tech features offered by the newest generation of in-ear protection. Many of these products

are completely wireless and include integrated Bluetooth technology, so they can be paired with a phone and other smart devices for hands-free calls and audio streaming. In addition, digital signal processing allows a shooter to fine-tune the listening experience so that the microphones are optimized for certain ambient frequencies, such as the human voice for conversation and range commands.

Every bit as important, all of the newer earbuds benefit from the latest battery technology, which extends the time between charges. When you’re comparing specs, remember that adding Bluetooth to the mix will accelerate battery drain.

TOP IN-EAR PICKS

What follows is a quick survey of some excellent electronic earbud options. All of them come with an assortment of ear tips in various sizes. You may find that one product matches the characteristics

of your ears better than another. If you’re unsure about the fit, don’t shoot with that earbud option until you’re confident that it fits properly.

NRR specifications differ among these products. While all should provide adequate protection when they’re used as directed, your firearms and shooting habits may point you toward one with a higher NRR.

WALKER’S SUPPRESSOR BLUETOOTH EARBUDS

Walker’s is one of the most recognized brands of active hearing protection. The Suppressor Bluetooth Earbuds (\$149.99) have a protective NRR of 25 decibels and are among the most popular products in Walker’s lineup.

These feature-rich earbuds provide a lot of bang for the buck, proving that cutting-edge technology continues to get cheaper and more accessible to the average citizen. Each earbud includes a full-range HD speaker and a pair of super-sensitive, omnidirectional microphones that work together to provide detailed audio of your surroundings. The Suppressor Bluetooth model can pair with your cellphone for hands-free calls and audio streaming.

While this set will work without Walker’s Link 4.0 app (available for iOS and Android devices), the polished companion interface allows for more intuitive and precise control. For example, the app allows you to fine-tune the audio in the earbuds using one of four listening modes:

- Universal (tunes all frequencies for a flat, even response)
- Clear voice (boosts frequencies associated with the human voice)
- High frequency (emphasizes high frequencies, which the human ear loses with age)
- Power boost (makes all frequencies twice as loud)

The app also includes additional useful settings, such as overall ambient volume control, volume balance for the left and right ears, a battery-conserving auto-off adjustment (disabled, two hours, four hours or six hours), and a device-finder utility that uses GPS to help locate your earbuds if you can’t find them. Walker’s says that the charging case provides up to 36 hours of



ACTIVE MEASURES

The Pro Ears Stealth offers features common across other in-ear designs but allows for adjustment on the attached power source/controller and provides the highest level of noise reduction of the units assessed.

“A GUNSHOT AT AN INDOOR RANGE CREATES MORE SOUND PRESSURE THAN IT DOES IN THE GREAT WIDE OPEN.”

use before you need to plug it in with a charging cable.

If you're willing to forgo the convenience of Bluetooth technology, you can save some money by opting for the standard Suppressor Earbuds (\$99.99). For about two-thirds the price, you still get the same protective NRR of 25 decibels, a dual-microphone array and HD speakers to aid in situational awareness, and the charging case. Since removing Bluetooth significantly increases battery life, the standard Suppressor Earbuds may be best suited for the shooting purist who favors function over flash.

Both models include corresponding locking fins in addition to three sizes of memory foam tips, which help secure the earbuds to the structure of the outer ears. And while the streaming audio fidelity of these earbuds doesn't compare to earbuds specifically designed for music, the Suppressor Earbuds' HD speakers sound surprisingly good.

AXIL XCOR PRO

AXIL, a brand that appeared on the recreational shooting industry radar in 2012, might seem like a relative newcomer. However, its parent company has roots in hearing protection that date back more than 60 years. AXIL began to

demand serious attention in 2021 when it started co-branding certain products with SIG Sauer, with the GS Extreme 3.0 (\$184.60) and XCOR Pro (\$307.67) models receiving strong reviews.

The latest iteration of the GS Extreme has an NRR of 17 to 21 decibels, depending on whether you choose the included silicone or foam tips. The earbuds are connected by wires in a lanyard design. Bluetooth connectivity is standard, so you can pair the GS Extreme with compatible devices.

You can control ambient sensitivity and Bluetooth volume through tap-and-touch buttons on the earbuds themselves as well as through a control stick positioned in-line with the lanyard. You can expect up to 15 hours of battery life from the rechargeable batteries, and the USB-C charge port is on the control stick.

The XCOR Pro is AXIL's premium option for wireless earbuds. It has an NRR of 21 to 23 decibels (again, depending on your chosen ear tip) and also supports Bluetooth pairing. Rated battery life is up to 13 hours for hearing protection only, up to seven hours for Bluetooth only and up to five hours for combined operation.

On paper, the XCOR Pro compares favorably to Walker's Suppressor Bluetooth

Earbuds and includes a similar charging case to maximize time away from wall outlets. However, the competing Walker's product delivers a slightly higher NRR.

ALTUS PRO EARS STEALTH 28 HTBT

Altus Brands, founded in 2007, offers an extensive line of both active and passive hearing-protection products. Among them is the Stealth 28 HTBT (\$179.99).

Like the AXIL GS Extreme 3.0, the Stealth 28 HTBT is a wired design that includes an in-line power supply/controller. It also offers Bluetooth compatibility, variable ambient audio sensitivity and a USB-C rechargeable battery rated for "15 working hours" between charges. At first glance, this product might seem like a perfectly adequate option that's similar to others already covered.

However, a closer look reveals some standout features. First and foremost, the Stealth 28 HTBT has an NRR of 28 decibels, the highest of the electronic earbud products surveyed here. Indeed, during my field test, this headset was noticeably quiet whether I was using pistols or rifles. If you're looking for maximum hearing protection with the added convenience of Bluetooth, this one should be a top contender.

“HUMAN EARS COME IN ALL SHAPES AND SIZES. BEFORE FIELD-TESTING YOUR NEW ELECTRONIC EARBUDS, TAKE THE TIME TO READ THE INSTRUCTIONS AND ENSURE PROPER FIT. THERE’S NO ONE-SIZE-FITS-ALL SOLUTION.”

Second, Altus – under its FenX Custom brand – also sells custom earmolds that are fully compatible with many Pro Ears products, including the Stealth 28 HTBT. Starting at \$99, these earmolds cost less than half as much as getting them through an audiologist. Furthermore, it can take weeks to schedule a local audiology appointment and additional weeks for the molds to be ordered, manufactured and shipped. FenX Custom has developed a mobile phone app (for both Android and iOS) that scans your ears and automatically sends the images to its Michigan-based manufacturing facility. Within days, the earmolds are shipped to your door.

FIT AND TRADE-OFFS

As long as a product – whether active or passive – is rated for shooting, it should adequately protect your ears.

However, there’s one big asterisk: It’s up to you to ensure proper fit and follow all instructions to the letter. Human ears come in all shapes and sizes. Before field-testing your new electronic earbuds, take the time to read the instructions and ensure proper fit. There’s no one-size-fits-all solution.

Remember to consider your individual needs. If you own both rifles and pistols and frequent both indoor and outdoor shooting environments, a single hearing-protection product may not cover every scenario.

As for electronic enhancements, there’s a fine line between convenience and distraction. For example, while you might argue that Bluetooth is beneficial for maintaining communication with family and friends at the range, using that same technology to stream music or talk on the phone while you’re shooting could be asking for trouble.

Also remember that there are battery-life trade-offs when you enable Bluetooth on any device, including electronic earbuds. While battery technology is improving every day, charging capacity is always fixed and limited. Whatever the maximum charge might be, the Bluetooth connection, microphones, speakers and other embedded electronics all compete for the same power source.



SOURCES

Altus Brands, LLC:

ProEars.com

AXIL: GoAxil.com

FenX Custom: FenXCustom.com

Walker’s: WalkersGameEar.com



So comfortable that you'll
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www.BUGBiteHolsters.com

