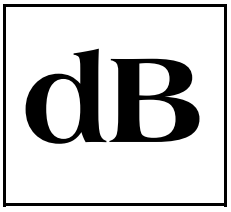
"I LOVE YOU GRANDPA"!

Hearing Protection and Selection

So what exactly is NRR? Huh? Say again! OK, I made my point about hearing loss. Your present and future hearing level is effected by the AMOUNT and LENGTH of time you are exposed to dangerous noise levels. Dangerous noise levels like shooting or even being around shooters. Wearing hearing protection while shooting is not only common sense, but should be viewed as mandatory. If you shoot with people who do not wear hearing protection then it's time to find some other shooting buddy's because the group you are hanging with is totally irresponsible and if they are irresponsible with their hearing then chances are they are going to be irresponsible and dangerous in other ways.



The intensity of sound is measured in units called decibels. The faintest sound heard by the human ear is called the threshold of hearing and is given a decibel rating of zero, or 0 dB. The decibel scale increases by the power of 10 for each increase in 10 levels. Although the mathematical power of 10 increase is not important in order to understand decibels, it is noteworthy that an increase from 20 to 30 decibels mean an increase in sound of 1,000 times the level of the 20 decibel sound. Here are some sample decibel levels you may relate to better than trying to understand the math of decibels: Whisper (20 dB), Typical conversation (60 dB), Household Vacuum Cleaner (80 dB), Eardrum Perforation (160 dB).

Gun shots, depending of course on the type of gun and muzzle brake, typically emit sounds around 100-120 decibels and that amount of dangerous and damaging noise can, over a short time, lead to permanent hearing loss. In fact, constant exposure to this level of noise, for a period of 8 hours, <u>will</u> result in permanent hearing loss. When we use hearing protection in the form of ear muffs or ear plugs we are trying to reduce the damaging noise to a more acceptable level, around 85-90 decibels. All hearing protection is required by law to list and label the NRR, or noise reduction rating. NRR is the amount of decibels which the hearing protection will REDUCE the damaging noise level. This means if you are shooting and the noise is at 110 decibels, using hearing muffs with a NRR of 25 means your ears are being exposed to 85 decibels.

Another rating you might run-into is SNR, Single Number Rating which is a European equivalent of the NRR. NRR and SNR are not exactly the same with the primary difference being the SNR ratings are done by independent laboratories and the NRR ratings are done by the hearing protection manufacture. Many times the NRR and SNR ratings are close, but if you run into a big difference then it might be prudent to use the lower rating.

Many people with sensitive hearing use a combination of ear plugs AND ear muffs in order to add more NRR to their hearing protection. Many times, the quickest solution to flinching while shooting is to double the ear protection. Although the plugs/muffs combination provides more NRR, the end result is not simple addition. That is, an ear plug with a 28 NRR combined with ear muffs of 28 does not give you an NRR of 56. Instead, dual protection often results in about 5 additional decibels of protection over the higher rated hearing protection, or a total of 33 NRR when using both ear plugs and ear muffs rated at 29 NRR. In retrospect, 33 NRR is a phenomenal amount of hearing protection that I have never seen in any single ear plug or ear muff until the ProEars Plus series arrived on-scene.

Ear plugs have typical NRR ratings from 20-30 NRR. Passive hearing muffs (non-electronic) have typical ratings 20-25. Typical electronic muffs have typical ratings 20-26 (ProEars Plus ratings are (25-33 NRR). So if ear plugs have the best ratings why not use ear plugs all the time? The biggest problem with ear plugs is proper fit, that is, they must be properly inserted in order to provide proper protection. Ear plugs are such simple devices that everyone thinks they know how to insert them properly. Over-confidence and failure to read the manufactures instructions often leave the ear plug user with much less NRR rating than if the ear plugs are installed in the ear according to their design. The proper way to insert ear plugs is to reach over the head, grab the top of the ear (to straighten and elongate the ear canal), then insert the ear plug to the proper

depth as recommended by the manufacture. The depth of insertion required in order to provide the rated protection may surprise many of you especially when you stop to consider that you may have to dig them out when your done.

Passive ear muffs are very popular and they get their NRR from tight seals around the ear and lots of sound absorbing foamy-stuff inside the ear cups. I cannot find any research to the positive or negative, but I have been told by several range masters at training schools that muffs cover up a lot of the bone area around the ear and reduce noise transmission through this bone into the ear and the muscles around the ear. Tight seals around the ear comes from two basic methods: Excellent seal material and tight-clamping the muffs against the head. I can't prove or disapprove whether the industry is made up of trade-offs between these two basic methods, but it would seem if you had a cheap seal you could offset the disadvantage by using a super-tight head band, and visa-versa. I have used the ProEars Passive Ultra NRR 33 and it appears the revolutionary cup material used by ProEars negates the need for "super-clamping" the muffs on your head. Generally speaking, ear muffs provide a little better NRR (in the field) than ear plugs simply because the seals around the cups on the hearing muffs are easier to place properly than to get the ear plugs in the right position and depth to match their NRR ratings. Of course, if you have a full beard and really hairy ears you will probably lose some NRR to the fur factor. Those who shoot rifles and shot guns will opt for muffs with a cut-corner, bevel or tapering on the bottom of the cups so they won't be banging the muffs on the stock, or worse yet, separating the cup from the head from pressure against the stock.

Electronic ear muff hearing protection provides the best of both worlds, but are more costly than ear plugs or passive ear muffs. If you attend shooting or combat schools, or are a firearms instructor, you can't afford not to use electronic muffs. The beauty of electronic muffs is they provide the NRR you need when shooting AND, they act like hearing aids and amplify normal sound (such as range commands). The best models (ProEars) have sound compression technology which compress the loud and damaging sounds to a safe level instead of clipping (chopping off) the sound. This means you still hear the gun shot but it is compressed down to a safe NRR. For example, if a range master yelled a command at the same time someone was firing you would still be able to hear the command and hear the gun shot. With the undesirable clipping technology in the cheap models, the noise from the gun shot would initiate the clipping circuit and all sounds would be shut-off during the high decibels of the gun shot.

Volume controls on each ear cup allow you to adjust the incoming sound to the level you desire. Low or mid-point is good for most shooting situation's. If you are on a very loud range, you can pop-in some ear plugs and crank-up the volume on your electronic muffs to hear normal conversation. Firearms instructors need to hear every sound on the firing range especially sounds that shouldn't be there. I know from experience what some of these sounds are that shouldn't be there. The sound of someone taking a magazine out of their pistol. The sound of someone bitching-out their handgun during a firing drill. The sound of two students talking during a firing drill. These are the sounds an Instructor must hear because they are red flags that something is not right and should be dealt with immediately. It's better to address these sounds-that-shouldn't-be-there than to have a frustrated student turn around (with loaded gun in hand) and ask for help.

Another very important specification of electronic muffs is the "attack time", the time it takes to fully compress the damaging sound to a safe level. ProEars has set the bar for "attack time" with their premium models clocking in at 2 milliseconds, that's .002 seconds! Even their entry level models, rated at 5 milliseconds are faster than other manufactures premium models.

No matter what type of hearing protection you decide to use, make sure you use it and use it correctly when you are on the shooting range. Your range bag should contain your hearing protection, a pair of safety glasses, and if you are shooting pistols, a hat with a bill. The hearing protection protects your sensitive hearing by preventing hearing loss caused by loud and damaging noise. The safety glasses

protect your eyes from powder blowback, steel target shrapnel, and hot ejected brass from the person next to you. The hat with a bill keeps hot ejected brass from falling between your safety glasses and your eyes, and also from falling down inside your shirt (ooh, ouch, hot!). Use all three personal protective devices (glasses, ear protection, hat with a bill), and make sure you have the same setup for your kids if they go to the range with you. You will build lifelong safety practices in your kids if they see Mom and Dad taking safety seriously.

Consider upgrading to electronic muffs in order to take advantage of all the benefits they offer the shooter. You may not realize that electronic muffs are not just for the shooting range. They are also used while hunting since they allow the hunter to hear normally while protecting their ears, if and when, a shot is taken. Electronic muffs are worn by those who have spent time on the range and have learned what types of personal protective equipment makes common sense. Next time you attend a training school, notice what type of hearing protection the Instructors are wearing. Next time you watch the shooting sports on TV, notice what type of hearing protection the pro's are wearing. They are all wearing electronic muffs with the majority being ProEars. There must be a pretty good reason why the pro's don't wear the cheap $89 discount store electronic muffs, or the even cheaper ear plugs. The reason is quite simple: They want to hear their Grandbabies say "I love you Grandpa", just like I do, and just like you do.