Off-Leash Training & Progressive Use of Electronic Collar

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Every new trainer desperately wants to know the secret to off-leash control. How one gets there is not so apparent. In on-leash training, it is clear that the leash is there to enforce the commands, but what happens if the leash comes off? The behavioral basis for off leash training, just like on-leash training, lies in conditioning. A dog's response to commands off-leash must become a habit. If the behavior is a habit, then there should be no reason the dog performs the command any differently in any different context. The question then becomes, how do you perfect the habit, or condition these off-leash behaviors, without a leash?

Typically there are 2 approaches to off-leash training. The first is the long-line method. Once the behaviors you want are conditioned with the dog on a short leash, switch to a long line, and let the dog drag the long line. Then the line is there to grab, and enforce commands. It becomes part of life, and the dog drags it everywhere. The problem is, if you live in a house with a landscaped yard, the leash will get fouled in trees, or in the woods on a walk. It can be cumbersome. If the dog gets 30 or more feet away, you will have to run to the leash to enforce commands. This presents a bad-timing issue.

The second approach is to train the dog using an electronic training collar (E-Collar). The electronic training collar is gaining more and more widespread use and acceptance in both pet training circles and working dog training, with excellent results.

The e-collar often gets bad press, especially from pure-motivation dog trainers. I believe these criticisms are based on false analogies and appeals to emotion and have no basis in fact. As with any training device which is designed to administer an aversive stimulus, it can be misused. But rather than condemn the device based on isolated misuse we should all learn and teach more about its proper use. It is important to establish guidelines regarding how and when to employ it, and with what kinds of canine temperaments. When it is an appropriate tool to achieve the goals we have for our dogs, it is unsurpassed in its ease of use and efficiency in meeting those goals.

Some decry its use simply because it is a form of aversive stimulus. Their argument usually is formulated on the grounds that aversive stimuli in training will "break the bond" between dog and handler: cause the dog discomfort and he will associate you with that discomfort. I believe this can be true, under certain circumstances, and especially when the collar is used as a teaching tool, rather than a tool for administering positive punishment (corrections), for competing motivations that interfere with positively reinforced learned behaviors.

The benefits to using the collar to deliver aversive stimuli are many. Primarily, it allows the trainer to teach that unacceptable behaviors do have consequences; regardless of how close the dog is to you, or whether the dog is wearing a leash and is tethered to the trainer. It allows for consistent levels of correction in a wider variety of contexts. Dogs trained to off-leash control can go to the beach, swimming, hiking in the woods, and still remain under control should some competing motivation arise.

Further, one can administer the aversive without becoming physical with the dog. By necessity, a leash correction requires the trainer to make hand and arm movements, which can cue behavior.

In addition, the e-collar allows unemotional delivery of corrections, and lessens the association between the handler and dog with the negative stimulus, for dogs with temperaments that are soft in nature. In fact, many people think that soft temperaments are poor candidates for e-collar training, and in my opinion, just the opposite is true. Dogs that are sensitive to the handler can be corrected on very low levels of stimulation, and the handler is not physically delivering the correction. In this article we will explore how training is done with these devices.

Electrical Engineering 101

Electronic training collars (e-collars) are comprised of a collar receiver that goes around the neck of the dog, and a transmitter that is held in the hand of the trainer. The trainer can choose how to deliver the stimulation, either by pressing the "nick" button or the "continuous" button. In "nick" mode, the transmitter delivers a pre-timed burst of stimulation on the order of a fraction of a second. In continuous mode, the collar delivers a continuous string of these pre-timed bursts as long as the button is held down. In this mode the collar usually has a fail-safe allowing only 10 seconds maximum stimulation.

The stimulation delivered is a very low amperage electrical charge, which stimulates the nerve endings in the neck. It feels exactly like a static electricity shock you might get from wearing wool socks on a carpet and then touching a doorknob. We have all done this, and felt startled, but we know that it is impossible for it to hurt us. One feature of getting a static electric shock is that one usually doesn't want to repeat it. This is the essential feature of low amperage stimulation that is useful in training a dog - the dog learns to do what we want in order to avoid the unpleasant sensation.

To understand how an e-collar provides an unpleasant stimulation, yet doesn't damage sensitive tissue; one needs to understand a little about electricity and how it generates power. Electrical current has two essential features: voltage and amperage. The power of an electrical current is measured in Watts, and is the product of voltage multiplied by amperage.

If we think of an electrical circuit as a pipe with water flowing through it, voltage is the force of the water pushing through the pipe, and amperage is the volume of electrical current flowing through the pipe. E-collars have high force but ultra low volume. Thus if the amps are low, even if the voltage is high, you can have high force behind the electrical current, but a very low output of power. It's like being shot with a water pistol versus a fire hose. A water pistol has a large force on a tiny volume of water. A fire hose has a high force on a high volume of water.

Many people make a false analogy between e-collars and getting "shocked" by the kind of electricity one would find in a house. House electrical current, or that from a car battery for that matter, is high amperage. High amperage means there is a high volume of electrical current, which can actually do physical damage. E-collars do not carry high amperage, and thus are unable to cause physical damage.

The manufacturers sell most modern electronic training collars as stand alone training systems. Their instructions include procedures for employing the collar as a teaching tool, to teach the dog new associations between command words and behaviors. This is done through using a behavioral consequence known as negative reinforcement. Reinforcement is any consequence that increases the likelihood of a behavior. Negative reinforcement requires removing an unpleasant consequence to increase the likelihood of a behavior. To do this with an e-collar, one puts the collar on a low setting and presses the continuous mode button, holding it down. The trainer then guides the dog into the behavior (e.g. "Sit"), or waits for the dog to figure out what behavior is required, and when the dog places his rear on the ground, the trainer releases the button, thus removing the unpleasant stimulation. The dog makes an association: sit removes the unpleasant feeling, thus increasing the likelihood of the sitting behavior.

There are, however, a few built in side effects to this approach. First, in order to remove the unpleasant feeling when the dog achieves the intended behavior, we must first induce the unpleasant feeling. This also provides an association: new learning can be unpleasant. Depending on the temperament of the dog, this can have no impact whatsoever, or can have a dramatic impact on the dog's behavior and desire to learn. Some of the trainers using this approach tout the fast results, and resulting calmness of the dog. When in reality the dog is stressed, and on the verge of shutting down, because he doesn't understand until he has had many repetitions what he is to do to escape the unpleasant feelings. The result is he is afraid to do anything that might bring on more unpleasant feeling.

All learning is stressful to a dog, but by a matter of degrees. When the dog has no idea of how to escape the unpleasant stimulation, he likely will shift into a defensive mood. When in a defensive mood, a dog has three options: to choose to fight against it, to choose an avoidance strategy, or to displace (shut down). The goal of negative reinforcement training is to have the dog figure out that he can avoid the unpleasant feeling by performing a very specific behavior, e.g. to sit. When considering this particular behavior out of the myriad choices of behaviors, one can imagine that the dog will go through a number of behaviors that don't work, since he hasn't been taught which behavior actually will work. Some trainers call this "exploring behaviors." I see it as a hole in the method. Why not teach the dog a set of behaviors that are likely to come into play, in a non-stressful way, before applying unpleasant stimulation. In fact before using the collar at all, why not train these behaviors motivationally, then use the collar as a form of positive punishment?

Punishment, in the animal behavior context, is any consequence that reduces the likelihood of a behavior. Positive punishment means we apply an unpleasant consequence (e-collar stimulation) to reduce the likelihood of a given behavior. In this sense, we will positively punish all unwanted behaviors, and positively reinforce all trained behaviors. The e-collar then becomes a tool for what we normally refer to as correction, rather than a teaching tool. This avoids the majority of the stress of the old method of negative reinforcement training, and results in negative associations only with unwanted behaviors, and positive associations with all trained behaviors.

There may be times when negative reinforcement is a valuable approach to teach a particular behavior in a particular way. However I still believe that teaching the dog the route to escape the negative consequence will make the training proceed in a less stressful way, and consequently it is easier for the dog to choose an avoidance strategy that will work and end the stimulation.

One training concept often trained with negative reinforcement is the retrieve of the object exercise in any of the protection sports: schutzhund, ring, or PSA for example. The reason we train a retrieve with negative reinforcement is to obtain two important goals: First, the dog must think of retrieving as work and not play. A dog that retrieves only out of play may have many other competing motivations, especially dogs of this caliber that do protection sports. Let's say he likes to bite the decoy more than retrieve. All the dog needs to think, then, is there is the promise of bite work, and he may choose not retrieve at a crucial time. Second, play retrieving also brings with it many characteristics that are judged negatively: fast to the object and slow to return, mouthing and playing with the object, nosing it, pawing at it, etc. The force tends to make the dog think of the exercise as more urgent and important than any possible competing motivation. The force also makes it less of a game, and diminishes the likelihood that the dog will play with the object or drop it like he may with a play toy.

Given that there may be valid reasons for using negative reinforcement training, then, why not make the entire exercise more easy for the dog to learn, rather than more difficult. There must be a better way than allowing the dog to "explore" random behaviors. Thankfully, there is a better way. Teach the dog to hold and grab the object motivationally (it may not be possible with some dogs that have no desire to retrieve, but this is a big minority) first, to give the dog a sense of the exercise.

So, whether you are teaching new concepts by positive reinforcement or negative reinforcement, there is ample reason to attempt to lay a motivational foundation to the required work. The next issue is, how do we do it, and then how exactly do we add the e-collar into the training in a way that it is very clear for the dog, and minimizes stress, and maximizes performance.

The Concept of Pairing Corrections

E-collar companies, and some of the e-collar trainers now teaching seminars on its use, often begin their introduction to using the e-collar by saying that right from the beginning we can teach your dog without ever using a leash, and standard on-leash training is out of date with the new e-collar technology.

It is much easier to introduce positive punishment in the form of a leash correction. Leashes attached to training collars have 2 components of interest: force and direction. A leash tugged gently in the upward direction, after a dog is taught motivationally (positive reinforcement & negative punishment) to sit, is a very easy way to deal with non-compliance to a learned behavior. The leash provides a reason not to choose to ignore the command to sit, and it also provides guidance on how to correct the inappropriate response. Each command has an associated leash correction, on which we can vary the force, and provide feedback to the dog on what exactly was required by the command. We teach what we refer to as guiding corrections to introduce the dogs to leash corrections (their first introduction to positive punishment).

Guiding corrections have very little force but apply guidance to the dog about what he did wrong and how to correct himself in the future. He learns therefore what each of the leash corrections mean, before they become a truly aversive stimulus. Once this is complete we morph the guiding corrections into standard leash corrections when commands are not properly executed. This is just increasing the level of the force until it is enough to positively punish the unwanted behavior in the given context.

Once the dog understands the meaning of leash corrections, we can introduce the e-collar as a new correction. To do this we employ simple classical conditioning to teach the dog, in a given context, that the e-collar stimulation (an aversive stimulus) means the same thing as the leash correction. The problem is that e-collars employ only force and not direction, the stimulation comes from the same direction all the time. Some trainers will move the collar box around the dog, up on the top of the neck for the down correction, under for the sit correction, etc. I don't do this either, as I believe it makes the dog wise to the placement of the collar.

Before I describe the procedure, I would like to mention that for me, the e-collar is best used as a correction for the action commands of heel and come initially. In fact for any pet dogs we train, those are the only corrections we give on the e-collar. This makes the context very easy for the dog to process. And for the average pet dog owner, if a dog breaks a stay, the dog can be called back to the handler and the come enforced with the e-collar, and then the dog is placed back in the stay.

As working dogs progress through the heeling, we will introduce corrections in other contexts using the collar, but they are few. Most other training can be managed without resort to e-collar corrections. I do use the e-collar paired up with a verbal reprimand so that I can get more out of my verbal corrections. But to understand this we must explore the concept of pairing corrections.

Classical or associative conditioning is what we rely on to switch the correction from a leash correction to an e-collar correction. Classical conditioning relies on the research of Ivan Pavlov, the Russian researcher who discovered that an initially neutral stimulus (ringing a bell) when paired with an unconditioned stimulus (one we don't necessarily have to teach the dog - like salivation in the presence of food in Pavlov's work) would elicit the same response as the unconditioned stimulus. He discovered that the path to this result is that the conditioned stimulus must closely precede the unconditioned stimulus in time.

We apply the same approach to the introduction of the new e-collar correction: The correction we wish to condition, that of the e-collar, is placed in time closely preceding the existing leash correction for heeling. The leash correction for heeling is a 180-degree turn with a jerk-and-release correction on the training collar (pinch or choke - I prefer the pinch). Thus what we do is as follows: when the dog shows an undesirable behavior (say, forges out of heel position) the trainer makes a 180-degree turn, nicks the dog on the e-collar, and follows that with the familiar jerk-and-release correction on the leash and training collar. The dog will soon learn that if he forges or goes wide, the e-collar will stimulate him, and that means get back in position.

Over a period of sessions we look for anticipation: the dog reacts to the e-collar correction after it is administered, and before the trainer follows up with the jerk-and-release. This anticipation clearly shows that the dog understands that the e-collar correction now means get back in position. The trainer can now eliminate the leash correction and eventually just carries the leash until the dog makes few if any errors. At that point the leash can be discarded, and the e-collar correction controls any unwanted behavior we may get during heeling. Notice that the heeling behavior itself is already well established before we go to the e-collar. Thus good associations are made with correct behavior, and the only negative associations are associated with inappropriate behaviors.

It is easy to extend this simple philosophy to any correction you make that involves a leash. The come command is a natural extension. Further one can add the extra dimension of the verbal reprimand into the heeling and come corrections. Just before the nick correction on the e-collar for unwanted behaviors, use your "no" command - I usually make a nasty grunt, it doesn't matter what it is, just that it precede the e-collar correction, making a further classical association. This gives power to your verbal reprimand - it is backed by the compulsive power of the physical e-collar correction.

I use this to deal with many other situations, such as stay commands, and corrections for sit and down, but especially if I see the dog is about to make a mistake, the reprimand "nips it in the bud" before a physical correction must be given. Correcting a dog before he makes a mistake is much more effective than correcting him after the fact. But you must be a good trainer able to anticipate the errors before they are full-blown errors.

Conclusion

E-collars offer us an efficient method of correction, for many behaviors, and especially for dealing with competing motivations. The E-collar can be employed to teach a correction for inattention in competition heeling, simply by pairing the "nick" prior to the familiar correction on the prong collar for a "watch" command.

In my opinion, teaching using negative reinforcement is outdated. We must remember that stress induced during the training process is cumulative, and by using the e-collar correction which is very effective as an aversive stimulus for all commands, allows the accumulation of stress which can affect performance. Make learning exciting and fun, by teaching new associations motivationally. Then, after these good behaviors are established, demand compliance to these trained behaviors by using thoughtful compulsion with an e-collar.