

Electronic Shock Collars: Are They Worth the Risks?

The advantages and disadvantages of using electronic shock collars as training tools to solve behavioral problems in dogs are reviewed. Three kinds of shock collars are described: one which operates manually via a remote-controlled transmitter; an antibark collar which operates whenever a dog barks; and a shock collar used for boundary training. Shock collars may be used to punish a target misbehavior or, alternatively, to encourage or facilitate behavioral response. Advantages of using shock collars include the ability to rapidly suppress a target misbehavior, the ability to administer remote punishment, and the ability to facilitate behavioral response. Disadvantages include the random discharge of shock; the problem of applying shock with incorrect timing, intensity, or duration; behavioral regression after a shock collar has been removed; shock-induced aggression; and lesions on the neck. The criteria needed before shock collar usage is considered are reviewed. It is concluded that shock collars should be used on a case-by-case basis by experienced users only, and that the decision to use one should be made only after all other options at behavioral problem solving have been exhausted.

Richard H. Polsky, PhD

R

Introduction

In recent years, electronic shock collars have become increasingly used as training tools for dogs. Nevertheless, there still remains a pervasive lack of understanding and confusion about how shock collars work and their relative advantages and disadvantages when used to correct behavioral problems. More often than not, veterinary personnel lack the knowledge to intelligently advise a client about the suitability of a shock collar as a training tool. Most veterinarians and technicians probably know that shock collars exist, but they remain uncertain about their effectiveness, what they can be used for, or their inherent dangers. This may be due to the fact that surprisingly little has been published in the veterinary or animal behavior literature which critiques the use of shock collars. The only technical publications that exist are brief overviews.^{1,2} However, the information contained in these papers is now largely outdated, considering the change over time in design and operation of shock collars. Currently, the only other literature available is the biased promotional and instructional information published by the companies who manufacture the collars themselves (e.g., Tri-Tronics³). Hence, there is the strong need for an objective review of the pros and cons of shock collars and the associated risks versus benefits when they are used for training purposes in trying to modify the behavior of a dog.

The use of electronic shock collars also is controversial. On one hand, there are those trainers and behaviorists who have very little reservation about employing electric shock as a means of solving a wide variety of behavioral problems. Opposed are those who argue that the pain from the shock inflicted to a dog via a collar is inhumane, unethical, and unnecessary regardless of the severity or kind of behavioral problem one is trying to change. In the middle are those who are unable to take sides because of their lack of knowledge and understanding about the advantages or disadvan-

From Animal Behavior Counseling Services, Inc., Los Angeles, California.

Requests for reprints should be sent to Richard Polsky, PhD, 2288 Manning Avenue, Los Angeles, California, 90064. Please include a self-addressed, stamped envelope.

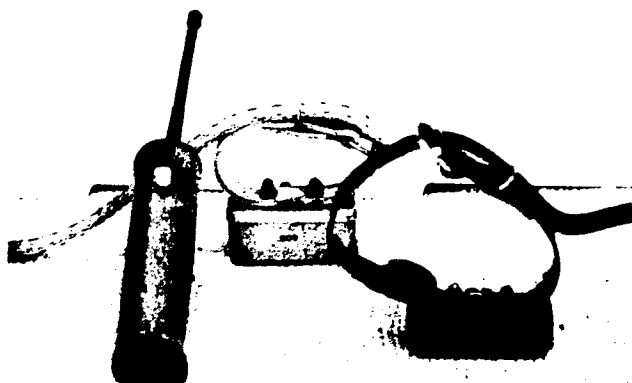


Figure 1—Two electronic shock collars. On the left is a typical shock collar with the remote hand-held transmitter. Resistor plugs are inserted into holes in the collar to control shock intensity. The collar on the right is a typical "antibark" collar. The round, rubberized disk on the strap of the antibark collar is sensitive to vibrations from the larynx. This activates the collar when a dog barks.

tages associated with the use of shock collars. This paper clarifies the issues surrounding the use of shock collars by focusing on the advantages and disadvantages in their use and the kinds of problems for which they are best suited.

Kinds of Shock Collars

Electronic shock collars are manufactured by several different companies. Manufacturers frequently advertise their products in dog specialty magazines such as *Dog World*, the *AKC Gazette*, and *Dog Fancy*. The collars can be purchased by anyone directly from the manufacturer, through pet mail-order catalogues, or through pet shops. There also are specialized companies which deal exclusively in the repair and resale of used collars. Contrary to what some believe, the use of shock collars currently is not prohibited in any state within the United States. Cost per collar ranges from about \$100 to \$900, depending on the model chosen and the manufacturer of the collar. The quality and reliability of the collars from different manufacturers vary tremendously.

The shock collar itself usually consists of a strap attached to a small square or cylindrical aluminum box containing two protruding electrodes. The collar is designed to fit so that the electrodes protruding from the collar make direct contact with the ventral surface of the neck. The small size of the box (size is approximately 4 in by 2 in by 1 in; weight is approximately 10 oz) usually enables it to fit comfortably around the neck of most dogs weighing at least 10

lbs. Each box houses the electronic circuitry needed to shock the dog.

Three basic models exist. One is a manual, radio-controlled collar which is activated by the user through depression of a button on a remote, hand-held transmitter [Figure 1]. Pushing the button on the transmitter activates the collar by means of a radio signal (much like a remote control for a television). Most manufacturers state that their collars are capable of being activated by a user from distances as far away as a quarter of a mile across flat terrain.

The second kind of collar is an "antibark" collar which activates whenever a dog barks [Figure 1]. When a dog barks, the vibrations from the larynx are detected by a rubber-coated sensor disk located on the collar strap. When the disk senses the vibrations, the collar activates and the dog is shocked. No remote transmitter or user interface is needed to operate this type of collar. Older antibark collars which operated via a microphone have now been replaced by the vibration-detector type. The microphone-activated antibark collars had serious drawbacks because they were prone to being activated by other barking dogs proximate to the dog wearing the collar.

The third kind of collar, the most popular of which is marketed under the trade name "invisible fence," operates via activation from a radio signal transmitted from a remote wire. The remote wire usually is buried underground on the perimeter of an owner's property. A control box which connects to the wire is plugged into an owner's electrical power supply from the home. This control box determines the distance of signal transmission from the underground wire. Whenever a dog comes within a predetermined distance from the wire (usually 1 to 2 feet), the collar activates and the dog is shocked. The "invisible fence" collars now widely are used to "boundary train" dogs.

Most collars allow the user to calibrate the intensity of the shock through insertion of resistors into the collar or through the built-in circuitry contained within the collar itself. This is a vast improvement from the earlier models which did not incorporate the feature of variable intensity. The better quality collars derive their power from rechargeable batteries. Cheaper models use 9-volt, throw-away batteries. Most manufacturers claim that their collars are waterproof. Technical information regarding electronic specifications (i.e., voltage, amperage) usually is not made available to the user.

Uses

Manual collars were developed originally, and still are used widely today, by hunters to assist in the training of bird and coon dogs. It only has been in the last 10 years that the collars have found a niche in the urban marketplace for companion dogs exhibiting behavioral problems.

Shock collars may be used to solve behavioral problems in two ways: to discourage or punish chosen target misbehavior, and to encourage or facilitate behavioral responding, such as teaching a dog an obedience procedure like "sit" or "come." The use of manual shock collars for this latter purpose may seem confusing and paradoxical. However, using shock as a painful stimulus to encourage behavior is based on the established learning principals of escape and avoidance conditioning.

The antibark collars are used exclusively as punishment to suppress or eliminate excessive barking. A variety of features now are available on these collars. For example, the so-called "watchdog" collar manufactured by Tri-Tronics allows a dog 30 seconds of "free" barking before the shock is delivered.

In summary, although shock collars can be used in two ways, they nevertheless still have only one function: namely, to deliver a noxious, painful stimulus to a dog. A dog absolutely has to perceive the shock as painful in order for the collar to effectively serve as a training tool.

Advantages

The principal advantages of using a shock collar to solve a behavioral problem lie in the following areas:

1. *Rapid Suppression of Behavior.* The effectiveness of shock as a form of corporal punishment cannot be disputed. Electronic shock, when applied properly, has the potential to quickly suppress a chosen target behavior. This fact has been demonstrated numerous times in laboratory behavioral studies using a variety of mammals, including dogs.⁴

There are a number of common misbehaviors displayed by companion dogs that readily can be suppressed solely through the proper application of a shock collar. Usually no other accompanying therapy is needed. Examples include:

- a. Displays of territorial aggression
- b. Excessive barking
- c. Incessant mouthing and biting in puppies
- d. Chasing after cars, joggers, or people on skateboards, or other misbehaviors motivated for predatory reasons

- e. Stealing household items, ingesting inedible objects (pica), or eating feces (coprophagia)
- f. Lunging toward other dogs in an aggressive manner
- g. Stereotypical behaviors such as tail-chasing and other kinds of obsessive-compulsive disorders^{5,6}
- h. Behaviors associated with escape from an owner's property (e.g., digging under or jumping over a fence, running through an open gate).

Punishment training with an electronic shock collar is not advisable for aggression stemming from dominance, aggression arising out of fear, or other kinds of misbehaviors that are fear-related (e.g., separation anxiety, phobias toward loud noises). Applying shock to a dominant or fearful dog is likely to intensify the displays of dominance or perpetuate a dog's already fearful state, respectively.

2. *Remote Form of Punishment.* In most cases, a dog will not associate the delivery of punishment with the owner when a shock collar is used. This is an important *consideration* and advantage in behavioral problem solving, because punishment usually works best if the source of punishment is disassociated from the owner and associated only with the performance of the misbehavior. If a dog associates punishment with the owner, such as often happens when interactive punishments like yelling or shaking a dog are used, then it is likely that the dog's misbehavior will stay suppressed only when the dog remains in the presence of the owner. Examples are in-house marking behavior or excessive territorial barking.
3. *Powerful Motivator of Behavior.* In contrast to using shock as a punishment, shock also can be used to facilitate the acquisition of behavior. When used in this fashion, shock paradoxically acts as a reward, as in escape and avoidance training. In escape and avoidance training, a dog is taught to perform a response (e.g., come here) in order to avoid discomfort (i.e., the shock). This contrasts with punishment training, in which the application of the shock is delivered to a dog after the performance of the misbehavior. In escape and avoidance training, the shock precedes the occurrence of the desired behavior. The dog has to perform the desired behavior (e.g., come to the owner) in order to escape or avoid the shock. When properly used in this fashion, it is possible to instill compliance in dogs who previously seemed incorrigible and totally untrainable.

Attesting to these advantages, one well-known and respected dog trainer devoted two chapters in a recent book to the use of shock collars and how they can be used optimally in training and behavioral problem solving.⁷ This author states, "An electric collar is a humane, safe, and effective tool to help you and your dog achieve a better relationship." Another respected behaviorist, Dr. Ben Hart, in his text on behavioral modification for dogs and cats, indicates that shock collars may be the most expedient way to deal with barking problems.⁸ In short, in the last several years, shock collars have become more widely accepted and are becoming more frequently recommended as a training tool by both trainers and behaviorists.

Disadvantages

There also are those who strongly oppose usage of shock collars. Until recently, the American Kennel Club would not accept advertising in the *AKC Gazette* on any kind of training device that administered shock. Another well-known behaviorist, Dr. Ian Dunbar, states, "Of all the misuses of punishment, I think that the use of a shock-collar to stop the dog from barking is the most barbaric....I find that anyone who would want to electrically shock a dog offensive and unnecessarily cruel."⁹ In short, Dunbar regards the use of a shock collar to stop a dog's barking behavior as cruel and unjust punishment. This author does not necessarily agree with Dunbar's opinion. Nevertheless, over the years, this author has become aware of the disadvantages and limitations of shock collars through many hours of direct, hands-on experience as an applied animal behaviorist treating canine behavioral problems. Experience has taught this author to beware of the following risks:

1. *Random Discharge of Shock.* Random discharge refers to the collars self-activating at inappropriate times. This is a serious and surprisingly common problem. Frequently, the cause of the random discharge is an extraneous radio signal from a source other than the hand-held transmitter. The antibark automatic collars also are prone to misfire. This author recalls the case of a dominant, male cocker spaniel who was fitted with an antibark collar to curtail his excessive territorial barking. This particular dog frequently displayed his dominance whenever he was scolded by his owner. One morning the owner caught the dog up on her kitchen table eating food. The owner

scolded him, and the dog reacted by growling which activated the collar. The shock in turn caused the dog's aggression to intensify to the point where the owner was nearly attacked.

2. *Incorrect Intensity, Timing, and Duration.* If too strong a shock is applied, it is possible that the emotional reactivity resulting from the pain will interfere with the dog's ability to learn or result in the dog forming an incorrect association. Moreover, if the dog's motivation to engage in the problem behavior is high, then repeated applications of strong intensity shock may be required. It is here where one has to be very concerned about the ethics involved in the application of this procedure. In contrast, if too weak intensity shock is applied, it's likely that the punishment will be ineffective to stop a misbehavior. Repeated application of too weak a shock in the beginning phases of training may allow the dog to habituate to the shock. If this happens, then it is likely that a dog will tolerate and be unaffected by even higher levels of intensity should they subsequently be needed. In short, the initial calibration of the proper shock intensity is not a straightforward task. Proper calibration may be difficult for those who lack experience in the use of the collars or those inexperienced in dog training methods.

A dog's ability to learn also will be compromised if the timing of the shock is delivered incorrectly. With the invisible-fence shock collars or antibark collars, this problem is avoided (i.e., the shock is delivered at a fixed duration immediately after the dog approaches within a fixed distance or when the barking starts). However, when a manual collar is used to punish misbehaviors other than barking or escape attempts from an owner's property, the user has to become skilled in delivering the shock with the correct duration immediately after the performance of the misbehavior. Moreover, delivering shock with the correct timing and duration becomes considerably more problematic in avoidance conditioning procedures. Errors in timing and duration may cause a dog to become fearful of the setting in which the shock was encountered. For example, if either type of error occurs in the owner's back yard, then the dog may become wary of the back yard. Through similar association, a dog may become wary of its owner. In short, if a dog is subjected to poorly timed shocks, to shocks through random discharge, or to shocks that last too long, then the dog is likely to become

confused, possibly traumatized, and probably afraid of the environment in which the electrical stimulation was experienced. Effects like these can be long-lasting and devastating, particularly in dogs with fearful temperaments.

3. *Regression.* Dogs clearly have the ability to "figure out" what the collar means. When this happens, a dog becomes cognizant that it cannot be punished for engaging in the misbehavior when the collar is not around its neck. Hence, the misbehavior returns when the collar is removed. Regression to the previously "untrained" state of misbehavior almost always happens when the collar is used in avoidance conditioning procedures. Regression also is likely to happen when the collar is used to solve barking problems or predatory-related problems in breeds with strong, innate proclivities for protection or predation. For other problems, especially the kind that have large learned components (e.g., certain kinds of barking, banging against doors), the issue of regression is a less important concern. Factors which affect regression include the user's consistency, the reinforcement history behind the problem, and the dog's innate proclivity to engage in misbehavior.
4. *Potential for Aggression.* A dog might respond with aggression (either toward a human or another proximate dog) when the pain of electric shock is experienced. This may come as no surprise to veterinarians who probably have observed other kinds of pain-elicited aggression in their practice. Behavioral scientists have long regarded pain as an unconditioned stimulus for aggression.¹⁰ For example, a restrained monkey will reflexively bite a tennis ball if shocked in the tail, and mice will reflexively fight if shocked on the feet in each other's presence. Likewise, some dogs are likely to attack the most proximate dog or human whenever they experience pain through electric shock. This risk seems to be greatest in dogs who previously have displayed aggression toward their owner (e.g., dominance aggression) or toward another dog in the house (e.g., "jealousy" fighting between resident females).
5. *Lesions.* A dog may develop lesions on the neck if the collar is kept too tight or if it is kept on the dog too long. The lesions result from the mechanical abrasion of the electrodes rubbing the skin rather than from the shock per se. This is a difficult problem, especially in dogs with skin problems (e.g., flea allergy dermatitis), because the collar has to be kept fairly snug in order for the electrodes to make contact with the skin. If lesions develop, then a shock collar cannot be used.
6. *Humane Considerations.* There are those who believe that electronic shock is inhumane and unnecessary regardless of the potential behavioral benefits. Without reservation, the ethics of the procedure need to be seriously considered whenever usage of a shock collar is contemplated.
7. *Other Limitations.*
 - a. Dogs under 10 lbs cannot be fitted with a collar due to their small size. Barking problems that commonly occur in smaller breeds cannot be treated through intervention with a shock collar. This limitation soon may change with the recent introduction by one manufacturer^a of a much smaller, lighter collar that can fit dogs weighing under 5 lbs.
 - b. Some larger breeds may not feel the shock no matter how high the intensity. There seem to be great individual differences in sensitivity to pain caused by the shock. Differences in sensitivity usually are not due to the thickness of the dog's coat which, if necessary, can be shaved to ensure better contact of the electrodes. Some dogs will adapt to the pain of the shock (regardless of intensity or duration) and come to tolerate it—especially if the motivation for the misbehavior is very strong.
 - c. Most antibark collars do not discriminate between the different kinds of barking. All are designed to suppress barking behavior whenever it happens, regardless of reason. Hence, when an antibark collar is used, a dog's nonobjectionable barking behavior, such as the kind found in play, barking at a prowler, barking out of excitement, or barking for attention also will be compromised.
 - d. Shock collars are subject to mechanical failure. In the author's experience, the equipment frequently has needed repair, often because the battery *has gone dead*. Downtime is a serious consideration, especially if an owner has become dependent on the collar as a means of keeping a dog's behavior under control.
 - e. The potential for misuse exists in first-time users who are not fully skilled or experienced in the proper operation of the collar. For this reason, most first-time users usually are served best through personalized instruction from a behaviorist thoroughly experienced in the use of the equipment. An experienced

user knows the importance of calibrating the intensity and duration of shock according to the dog's temperament and the severity of the dog's misbehavior.

Criteria for Use

Only in exceptional circumstances will the author ever recommend a shock collar as a means of instilling behavior in a dog's repertoire (e.g., escape and avoidance conditioning). Proper application of the technique is usually too difficult for the average owner to master, and the problem of regression is too great to ignore. On the other hand, as a last resort the author will consider use of a shock collar for punishment training to reduce or eliminate certain misbehaviors being displayed by dogs in specific situations. However, it must be emphasized again that a shock collar should be used only after all other behavioral training options (e.g., counter-conditioning techniques) and punishments have been tried without success.

In most instances, one can justify use of a shock collar only after the following criteria have been met:

1. The misbehavior is the kind that probably would be suppressed through the application of punishment. The specific kinds of misbehaviors for which use of a shock collar may be effective have been listed earlier.
2. A rapid solution to the problem is required. Frequently, an owner needs to find a rapid solution to a long-standing problem. A common example is the situation where an owner's neighbors are very angry over a dog's excessive barking. In a situation like this, an antibark collar often works very quickly provided that it is fitted properly and that the shock impacts the dog at the optimal intensity.
3. All previous attempts to correct the problem have failed. Attempts at behavioral correction may have included medical intervention, dietary change, drug therapy, obedience training, counter-conditioning, and various kinds of interactive punishment. To repeat, one needs to carefully assess the effects of all previous steps the owner or veterinarian have taken and then use the collar only as a last resort.
4. The history behind the problem is long-standing. Behavioral problems that have been happening for a long time probably have been reinforced on many occasions and therefore are probably resistant to most conventional forms of punishment.
5. A strong motivation to engage in the problem behavior exists. Strongly motivated misbehav-

iors usually can be suppressed through punishment, provided that the punishment has sufficient impact on the dog and is administered immediately after the start of the misbehavior. The only punishment training technique this author knows which can reliably and consistently meet both these criteria is the remote application of shock via a collar.

Conclusions

This paper has presented an overview of the advantages and disadvantages of electronic shock collars. In general, a shock collar may be an effective training tool to solve certain kinds of behavioral problems. It should be considered only after all other attempts at behavioral change have been undertaken. As a behaviorist, the author takes a "middle of the road" attitude when recommending use of a shock collar. For some situations, the usage of a shock collar would be prudent when it becomes apparent that a problem cannot be solved through conventional methods of behavioral modification. In other situations its usage would be a mistake. Shock collars are simply tools. If used correctly, benefits may result. Unfortunately, this particular tool has the potential to be easily misused and abused. The bottom line is that training situations differ, and the pressures facing owners differ from case to case. It is up to the owner, along with counsel from the veterinarian and behaviorist, to decide if the benefits outweigh the risks in the use of this equipment.

* Innotek, Ft. Wayne, IN

References

1. Vollmer P. Electrical stimulation as an aid in training. Part I. *Vet Med/Sm Anim Clin* 1979;Nov:1598-601.
2. Vollmer P. Electrical stimulation as an aid in training. Part II. *Vet Med/Sm Anim Clin* 1979;Dec:1737-9.
3. Tortora, D. Understanding electronic dog training. Tucson: Tri-Tronics, 1982.
4. Solomon R, Kamin L, Wynne L. Traumatic avoidance learning: the outcomes of several extinction procedures with dogs. *J Abnormal and Social Psychology* 1953;48:291-302.
5. Overall K. Recognition, diagnosis and management of obsessive-compulsive disorders. Part I. A rational approach. *Canine Pract* 1992;17:25-8.
6. Overall K. Recognition, diagnosis and management of obsessive-compulsive disorders. Part II. A rational approach. *Canine Pract* 1992;17:40-4.
7. McSoley R. Dog tales: how to solve the most troublesome behavior problems of man's best friend. New York: Warner Books, 1988:43-58.
8. Hart B, Hart L. Canine and feline behavioral therapy. Philadelphia: Lea & Febiger, 1985:74-5.
9. Dunbar, I. Barking. Berkeley: Center for Applied Animal Behavior, 1986:7.
10. Ulrich R. Pain as a cause of aggression. *Am Zoologist* 1966;6:643-62.