

# The Evidence Is Overwhelming – Or Is It?

*A Review of Dog Training Tools and Methods Research*

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## Introduction

Within the dog training world there is a split, a divide, tribal warfare so-to-speak, regarding training methods, training tools, and regulation of the industry. This is primarily an internal clash of ideologies, but there is a movement (generally, unbeknownst to the public) to shift all dog training and trainers away from the dark side of so called “outdated training tools and methods” and into the “scientific light.” There are no universal designations for the two views, and some are intended to be more pejorative than accurately descriptive (e.g. “aversive-based” or “punishment-based”). For the purposes of this paper, we will use “Balanced” (BD) for the former “Positive Only” (PO) for the latter. Although there is disagreement from trainer to trainer whether or not either of these descriptors is adequate, we will use them for the purposes of this paper. Broad descriptions of PO and BD are:

**Characteristics of PO:** *Positive reinforcement is used exclusively, and excludes the use of prong collars, ecollars, and choke chains (PEC). Any use of these tools is detrimental to the dog’s well-being. Nationally recognized PO trainers include Karen Pryor, Pat Miller, and Patricia McConnell.*

**Characteristics of BD:** *Positive reinforcement is used, and a variety of other methods may be also be used and may include PEC. When properly used, PEC are effective and do not harm the dog’s well-being. Nationally recognized BD dog trainers include Ivan Balabanov, Michael Ellis, and Larry Krohn.*

The push-pull between the two camps is actually quite lopsided in terms of organizing actions to affect the industry. PO tends to be on the offensive in mobilizing professional organizations and introducing legislation. BD is generally on the defensive, reacting to what PO is doing, case by case. As is the case with many movements these days, the terms “science,” “scientific evidence,” “science-based,” “scientific knowledge,” “scientific research,” “peer-reviewed, scientific studies” and “scientific consensus” are stated with a great deal of confidence, and sometimes as a “check mate” to try and end any further discussion. Organizations found to use “science” and related phrases as justification for their position include, but are not limited to:

- American Veterinary Society of Animal Behavior (*Position Statement on Humane Dog Training*)
- Animal Behavior Society (*Statement on Dog Training and Behavioral Well-being*)
- American College of Veterinary Behaviorists (*Pet Training Regulations*)
- Pet Professionals Guild (*Position Statement: The Use of Shock in Animal Training*)
- Certification Council for Professional Dog Trainers (*CCPDT Values – Scientific Principles*)

Any questioning of the science related to dog training may be met with the label, “science denier.” However, science is not a mathematical proof and is never “settled,” as new information may challenge existing paradigms.

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Since “science,” or any derivative statement thereof, is a key component of the PO claims against the methods and PEC used by BD, an investigation into the cornerstone (science) of those claims is appropriate. The proposals being made in the name of science will have national and long-term effects on the industry. The removal of PEC and associated methods are part of the approach being taken and this will impact (1) dog trainers whose livelihood depends on BD training and (2) dogs that might not otherwise be helped without using the tools/methods. The method of implementing a ban on PEC and associated methods, however, is somewhat of a “Trojan Horse.” Currently, there is no direct effort to ban PEC and associated methods in the United States. However, all proposed dog trainer regulations are by POs, and a certification requirement is part of the proposed legislation. The certifying body is itself a PO organization, thereby effectively banning the use of PEC, without having to go through the legislative process for those tools. An excerpt from The Alliance for Professionalism in Dog Training’s Model Legislation reads:

*“...require its certified dog trainers to adhere to policies equivalent to or more restrictive of aversive practices than the Joint Standards of Practice, Professional Code of Ethics, and Least Intrusive, Minimally Aversive Effective Behavior Intervention Policy as developed by the Association of Professional Dog Trainers (“APDT”), the Certification Council for Professional Dog Trainers (“CCPDT”), and the International Association of Behavior Consultants (“IAABC”),...”*

As further evidence that this language is given to legislators, the proposed Illinois Senate Bill, SB1372, introduced 2/6/23 by Senator Craig Wilcox reads:

*“...require its certified dog trainers to adhere to policies equivalent to or more restrictive of aversive practices than the joint standards of practice, professional code of ethics, and least intrusive, minimally aversive effective behavior intervention policy as developed by the Association of Professional Dog Trainers, the Certification Council for Professional Dog Trainers, and the International Association of Animal Behavior Consultants, as in effect as of January 1, 2019...”*

Least Intrusive, Minimally Aversive (LIMA) is the key aspect of the language. Each PO identified in the proposed legislation has at least one statement regarding LIMA. The statements prohibit the use of or work toward the elimination of PEC.

APDT LIMA excerpt: *“APDT takes the stance that there are no training or behavior cases which justify the use of intentional aversive punishment-based interventions in any form of training ranging from general obedience and tricks to dealing with severe behavior problems. This is in agreement with the American Veterinary Society for Animal Behavior\* and available literature.”*

\*This is a reference to the AVSAB Position Statement on Humane Dog Training, which is used as the primary focus of this paper.

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CCPDT LIMA excerpt: *“We focus on reinforcing desired behaviors and always ask the question, ‘What do you want the animal TO do?’ Relying on punishment in training does not answer this question, and therefore offers no acceptable behavior for the animal to learn to replace the unwanted behavior. These LIMA guidelines do not justify the use of aversive methods and tools including, but not limited to, the use of electronic, choke or prong collars in lieu of other effective positive reinforcement interventions and strategies.”*

IAABC Statement on LIMA, excerpt from Addendum Section: *“Our goal is to eliminate the use of shock devices from training and behavior work, and to do so by modeling, educating, and providing members with effective alternatives.”... “Members will work to eliminate the use of shock completely from their practice.”*

The foundation of the efforts to eliminate BD (the portion that allows the use PEC) through dog trainer regulation is that science supports their position. The objective of this paper is to examine the veracity of the that assertion and provide context to the position. We will attempt to answer the question, “Does the current scientific evidence, as referenced in the AVSAB *Position Statement on Humane Dog Training* support the conclusion that “Aversive training methods have a damaging effect on both animal welfare and the human-animal bond?” We will examine the twenty-one references, classifying each in terms of the type of scientific research being employed and potential problems with any individual AVSAB cited study.

Full disclosure: I am a dog trainer (with a scientific background, educationally and professionally) who falls into the BD category. I have been training dogs and their owners for more than ten years, and my observational experience directly contradicts the conclusion made in the AVSAB *Position Statement on Humane Dog Training*. I have never been involved in training a dog where the end result had “a damaging effect on both animal welfare and the human-animal bond,” from my perspective or from dog owner feedback.

## **A Word About “Science”**

As mentioned previously, “science” is commonly bandied about without much consideration for what it really means. And the meaning can be as varied as the ice cream choices at Baskin-Robbins. An article from Scientific American gives a reasoned perspective:

*“Another popular move is to say scientific findings are true because scientists use “the scientific method.” But we can never actually agree on what that method is. Some will say it is empiricism: observation and description of the world. Others will say it is the experimental method: the use of experience and experiment to test hypotheses. (This is cast sometimes as the hypothetico-deductive method, in which the experiment must be framed as a deduction from theory, and sometimes as falsification, where the point of observation and experiment is to refute theories, not to confirm them.) Recently a prominent scientist claimed the scientific method was to avoid fooling oneself into thinking something is true that is not, and vice versa.*

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Each of these views has its merits, but if the claim is that any one of these is the scientific method, then they all fail. History and philosophy have shown that the idea of a singular scientific method is, well, unscientific. In point of fact, the methods of science have varied between disciplines and across time. Many scientific practices, particularly statistical tests of significance, have been developed with the idea of avoiding wishful thinking and self-deception, but that hardly constitutes “the scientific method.” Scientists have bitterly argued about which methods are the best, and, as we all know, bitter arguments rarely get resolved.”

<https://www.scientificamerican.com/article/if-you-say-science-is-right-youre-wrong/>

## Methodology

Each of the twenty-one cited references will be reviewed and categorized in the following manner:

- 1) Is the study Correlational Research or Causal Research? From <https://www.scribbr.com/methodology/correlation-vs-causation/>:
  - a. “Correlation describes an association between types of variables: when one variable changes, so does the other. A correlation is a statistical indicator of the relationship between variables. These variables change together: they covary. But this covariation isn’t necessarily due to a direct or indirect causal link.

*In a correlational research design, you collect data on your variables without manipulating them. Correlational research is usually high in external validity, so you can generalize your findings to real life settings. But these studies are low in internal validity, which makes it difficult to causally connect changes in one variable to changes in the other. These research designs are commonly used when it’s unethical, too costly, or too difficult to perform controlled experiments. They are also used to study relationships that aren’t expected to be causal.”*

- b. “Causation means that changes in one variable brings about changes in the other; there is a cause-and-effect relationship between variables. The two variables are correlated with each other and there is also a causal link between them.

Causal Research (Scientific Method – See description below)

Causal links between variables can only be truly demonstrated with controlled experiments. Experiments test formal predictions, called hypotheses, to establish causality in one direction at a time.

Experiments are high in internal validity, so cause-and-effect relationships can be demonstrated with reasonable confidence.

You can establish directionality in one direction because you manipulate an independent variable before measuring the change in a dependent variable.

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*In a controlled experiment, you can also eliminate the influence of third variables by using random assignment and control groups.*

*Random assignment helps distribute participant characteristics evenly between groups so that they're similar and comparable. A control group lets you compare the experimental manipulation to a similar treatment or no treatment (or a placebo, to control for the placebo effect).*"

The steps of the scientific method go something like this, according to [Highline College](#):

1. Make an **observation** or observations.
2. Form a **hypothesis** — a tentative description of what's been observed, and **make predictions** based on that hypothesis.
3. **Test the hypothesis** and predictions in an **experiment that can be reproduced**.
4. Analyze the data and draw conclusions; accept or reject the hypothesis or modify the hypothesis if necessary.
5. **Reproduce the experiment until there are no discrepancies between observations and theory.** *"Replication of methods and results is my favorite step in the scientific method," Moshe Pritsker, a former post-doctoral researcher at Harvard Medical School and CEO of Jove, told Live Science. "The reproducibility of published experiments is the foundation of science. No reproducibility — no science."*

An associated, well-known, and sometimes overused saying is, "A correlation doesn't imply causation, but causation always implies correlation."

- 2) Which sub-type of study best describes the research? From <https://www.indeed.com/career-advice/career-development/types-of-studies>

For Correlation Research:

- a. Meta-analysis - A meta-analysis study helps researchers compile the quantitative data available from previous studies. It's an observational study in which the researchers don't manipulate variables.
- b. Systematic review - A systematic review examines all the literature related to a specific research question in a standardized way. Systematic reviews aim to put relevant data into a more organized collection and to identify opportunities for further research on a topic.
- c. Cohort study - A cohort study examines different groups of people, or cohorts, to determine possible trends over time. Researchers don't control or manipulate variables. Instead, researchers choose groups based on shared features, such as exposure to a chemical, participation in an event or members of a certain group.

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- d. Case-control studies - Case-control studies analyze people exhibiting a certain outcome, referred to as the cases, with those not exhibiting the outcome, or the controls, to compare the levels of exposure of an agent in each group. Researchers in case-control studies want to determine if an association exists between exposure and a certain outcome.
- e. Cross-sectional studies - Cross-sectional studies are designed to determine the incidence of a certain outcome in a specific population at a set time. They often use surveys to gather data from participants. Cross-sectional studies are well suited for measuring the prevalence of a disease or other factor and the efficacy of diagnostic tests.

For Causation Research:

- f. Quasi-Experimental Design (from <https://scribbr.com>) - Like a true experiment, a quasi-experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable. However, unlike a true experiment, a quasi-experiment does not rely on random assignment. Instead, subjects are assigned to groups based on non-random criteria. Quasi-experimental design is a useful tool in situations where true experiments cannot be used for ethical or practical reasons.

### Quasi-experimental design vs. experimental design

Quasi-experimental design	Experimental design
<b>Characteristic 1</b> Subjects are assigned to groups with a non-random method	<b>Characteristic 1</b> Subjects are randomly assigned to groups
<b>Characteristic 2</b> Researcher often doesn't have control over the treatment (pre-existing groups)	<b>Characteristic 2</b> The researcher usually designs the treatment
<b>Characteristic 3</b> Control groups aren't mandatory	<b>Characteristic 3</b> Requires the use of control and treatment groups

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- g. Randomized controlled trial (Scientific Method/Experimental Design) - A controlled clinical trial tests the effectiveness of a treatment, device or procedure versus receiving no treatment or a different treatment. A randomized controlled trial is a controlled clinical trial that uses randomization techniques to assign participants to a group.

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- 3) Are there any potential problems with the study?
  - a. This evaluation includes the methodology and subsequent conclusions but does not include the selection and appropriateness of the statistical measures being employed to analyze data.

The twenty-one cited references are:

<sup>1</sup> Ziv G. The effects of using aversive training methods in dogs—A review. *J Vet Behav Clin Appl Res.* 2017;19:50-60.

<sup>2</sup> Fernandes J, Olsson IA, de Castro A. Do aversive-based training methods actually compromise dog welfare?: A literature review. *Appl Anim Behav Sci.* 2017;196:1-12.

<sup>3</sup> Makowska I. Review of dog training methods: welfare, learning ability, and current standards. <https://spca.bc.ca/wp-content/uploads/dog-training-methods-review.pdf>. Published 2018. Accessed September 1, 2020.

<sup>4</sup> Vieira de Castro, AC, Fuchs D, Munhoz Morello G, Pastur S, de Sousa L, Olsson IAS. Does training method matter? Evidence for the negative impact of aversive-based methods on companion dog welfare. *PloS one* 2020;15(12): e0225023.

<sup>5</sup> Deldalle S, Gaunet F. Effects of 2 training methods on stress-related behaviors of the dog (*Canis familiaris*) and on the dog–owner relationship. *J Vet Behav.* 2014;9(2):58-65.

<sup>6</sup> Cooper JJ, Cracknell N, Hardiman J, Wright H, Mills D. The welfare consequences and efficacy of training pet dogs with remote electronic training collars in comparison to reward based training. *PLoS One.* 2014;9.9:e102722.

<sup>7</sup> Haverbeke A, Laporte B, Depiereux E, Giffroy J-M, Diederich C. Training methods of military dog handlers and their effects on the team’s performances. *Appl Anim Behav Sci.* 2008;113(1-3):110-122.

<sup>8</sup> Schilder MB, van der Borg JA. Training dogs with help of the shock collar: short and long term behavioural effects. *Appl Anim Behav Sci.* 2004;85(3-4):319-334.

<sup>9</sup> Arhant C, Bubna-Littitz H, Bartels A, Futschik A, Troxler J. Behaviour of smaller and larger dogs: Effects of training methods, inconsistency of owner behaviour and level of engagement in activities with the dog. *Appl Anim Behav Sci.* 2010;123(3-4):131-142. (SEE NOTE)

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<sup>10</sup> Blackwell EJ, Bolster C, Richards G, Loftus BA, Casey RA. The use of electronic collars for training domestic dogs: estimated prevalence, reasons and risk factors for use, and owner perceived success as compared to other training methods. *BMC Vet Res.* 2012;8(1):93.

<sup>11</sup> Casey RA, Loftus B, Bolster C, Richards GJ, Blackwell EJ. Human directed aggression in domestic dogs (*Canis familiaris*): Occurrence in different contexts and risk factors. *Appl Anim Behav Sci* 152, 52-63. 2014;152(52-63).

<sup>12</sup> Casey RA, Loftus B, Bolster C, Richards GJ, Blackwell EJ. Inter-dog aggression in a UK owner survey: prevalence, co-occurrence in different contexts and risk factors. *Vet Rec.* 2013;172(5):127.

<sup>13</sup> Herron ME, Shofer FS, Reisner IR. Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesired behaviors. *Appl Anim Behav Sci.* 2009;117(1-2):47-54.

<sup>14</sup> Hiby EF, Rooney NJ, Bradshaw JWS. Dog training methods, their use, effectiveness and interaction with behaviour and welfare. *Anim Welf.* 2004;13(1):63-69.

<sup>15</sup> Reisner IR, Houpt KA, Shofer FS. National survey of owner-directed aggression in English Springer Spaniels. *J Am Vet Med Assoc.* 2005;227(10):1594-1603.

<sup>16</sup> de Castro ACV, Barrett J, de Sousa L, Olsson IAS. Carrots versus sticks: The relationship between training methods and dog-owner attachment. *Appl Anim Behav Sci.* 2019;219:104831.

<sup>17</sup> China L, Mills DS, Cooper JJ. Efficacy of Dog Training With and Without Remote Electronic Collars vs. a Focus on Positive Reinforcement. *Front Vet Sci.* 2020;7:508.

<sup>18</sup> Rooney NJ, Cowan S. Training methods and owner-dog interactions: Links with dog behaviour and learning ability. *Appl Anim Behav Sci.* 2011;132(3-4):169-177.

<sup>19</sup> Masson S, Nigron I, Gaultier E. Questionnaire survey on the use of different e-collar types in France in everyday life with a view to providing recommendations for possible future regulations. *J Vet Behav.* 2018;26:48-60.

<sup>20</sup> Mormède P, Andanson S, Aupérin B, et al. Exploration of the



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hypothalamic–pituitary–adrenal function as a tool to evaluate animal welfare. *Physiol Behav.* 2007;92(3):317-339.

<sup>21</sup> Mills DS, Marchant-Forde JN, eds. *The Encyclopedia of Applied Animal Behaviour and Welfare.* CABI; 2010. (SEE NOTE)

**NOTE: Reference 9 has been requested from the authors. Reference 21 will be excluded from the analysis, as it is not a research paper.**

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