Training Animals to Accept Oral Medications and Injections without Restraint

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Abstract: Training animals to accept medications is becoming an important part of animal care in zoos. These behaviors are less commonly trained with companion animals, but can be accomplished with proper guidance. This paper will discuss the steps to train different procedures to accept oral medications and injections using science based training technology. Preventing common mistakes and useful strategies to train acceptance of unpleasant tasting medications and painful injections will also be addressed.

Key Words: Injection training, oral medications, pilling, operant conditioning, classical conditioning, systematic desensitization, positive reinforcement, shaping with approximations

Training to Accept Oral Medications

Prescribing oral medications is a relatively routine occurrence in veterinary medicine. However ensuring these medications are consumed in the appropriate dosage can be challenging. An often easy and effective approach is to hide a tablet or capsule with a preferred food item. Another strategy is to create a liquid compound that is palatable to the species in question. If the animal finds the medium for delivery desirable and the medication is unnoticeable this is often sufficient for many animals to receive required medications.

However some animals may find the flavor of the suspension overpowered by the unpleasant taste of medication or may react to the presence of a tablet/capsule hidden within food and eat around or expel the medication. In these situations caregivers often must resort to restraint and coercion in order to administer medications. The stress involved can create fear responses, aggressive behavior, exacerbate medical conditions and make it less likely medication is delivered as prescribed, especially if this has been assigned to a client with limited experience in administering medication.

Training the behavior of voluntarily accepting medications using positive reinforcement offers a solution to this predicament. The objective is to teach the animal to accept a variety of fluids from a syringe and/or items from a piller followed by a desired reinforcer, ideally prior to the onset of illness. These relatively simple behaviors can usually be trained within 2 -5 training sessions. They can then be maintained by practicing the behavior(s) once every few weeks. Once these behaviors have a strong reinforcement history, oral medications can be easily administered in the event they are needed.

Fluid from a syringe

The following describes the process for training accepting fluids from a syringe to prepare for taking oral medications. The first step it to introduce the syringe. If the animal has not had prior history that involves aversive experiences with the syringe this process can go very quickly. Regardless of past experiences, it is important to use systematic desensitization to introduce the syringe in a manner that does not provoke a fear response. This requires having the syringe present, usually laying stationary on a surface, in which it is noticeable to the animal, but the animal's body language remains calm and relaxed. The syringe can be gradually moved closer to the animal as long so the animal continues to

remain calm. The slightest indication of a fear response should cause the syringe to be moved farther away to a point that causes the animal to return to a calm state.

Once the animal is comfortable with the syringe in close proximity it is possible to start pairing desired experiences with its presence. This may mean pairing preferred food items, or desired touch, or other desired experiences while the syringe is gradually brought closer to the animal. Another option is to leave the syringe in a specific location and place preferred items near and on top of it and allow the animal to approach it on its own.

However typically there will be a need to approach the animal with the syringe eventually. At this stage it is important to move the syringe with one hand, quite slowly towards the animal's mouth, while allowing the animal to consume preferred food items delivered from the other hand. Usually this step is much more easily accomplished with food versus other types of reinforcers. Gradually the tip of the syringe is moved forward and the hand delivering food drops back. Essentially these two items (syringe and food) trade positions. Typically when the syringe replaces the food as the leading item the animal will reach out with its mouth to interact with the syringe. In this moment the food item can be delivered as a response for doing the correct behavior of reaching for or touching the syringe. The training process switches from systematic desensitization and classical conditioning to operant conditioning utilizing positive reinforcement. The food is now delivered contingently for the animal doing a specific action of choosing to interact with the syringe with its mouth. It is important to note that the syringe is close but not pushed into the animal's mouth. The animal is given the choice to reach towards it once within range.

A bridging stimulus can also be helpful in this situation. Giving a signal such as the word "good," a click, or blowing a whistle the moment the animal makes contact with the syringe can indicate the behavior was done correctly and allows the caregiver a few seconds to deliver reinforcers. 1 Ideally reinforcers are delivered as close in time as possible to when the behavior was presented. Caregivers should still aim to offer reinforcers in a timely manner.

Once the animal is readily touching the syringe with its mouth or tongue, water can be added to the syringe. The syringe is presented and the behavior of touching the tip of the syringe with the tongue or placing the mouth on the syringe is reinforced. At this stage the syringe should not be depressed and no water should come out of the syringe. Just having water in the syringe is a change in criteria. After several successful repetitions at this approximation, a drop of water can be allowed to hang from the tip of the syringe. Unfortunately there is no smaller approximation between drop of water and no drop and some animals will react when contact with water is made the first few times. For example many psittacine birds will shake their heads. It is important to still reinforce for making contact with the syringe. Eventually this reaction will extinguish. Usually after several repetitions the animal will be receptive to accepting several drops of water from the syringe before receiving reinforcers. Some will readily accept drinking quantities of water.

At this stage the process can be repeated with another type of fluid. Generally it is advised to use a fluid that is palatable to the species. It is advisable to go back to the step in which the animal makes contact with the syringe but no fluid comes out and gradually work through the approximations again. This procedure is repeated with many different fluids until the behavior is generalized to many types of fluids.

Animals can also be trained to accept medications that taste unpleasant. This is done by using a diluted bad tasting fluid and gradually increasing the concentration, for example using a diluted vinegar solution. This should also be trained with a variety of unpleasant flavors so that it too is generalized. However it should occur infrequently compared to the frequency of pleasant tasting fluids delivered from the syringe to help maintain a strong history of desired outcomes associated with accepting fluid from a syringe.

Training to accept pills using a piller

Training animal to accept pills is also possible using a similar approach with some slight modifications. Systematic desensitization and classical condition can be used to help the animal have a pleasant association with the piller. Similar to the syringe the animal can learn to associate good things with the piller by having it approach slowly and smearing food on the end. The piller should not be put into the animal's mouth. The goal is for the animal to voluntarily take it into its mouth. After many repetitions of accepting food off of the end of the piller the animal will be eager to put its own mouth over the end of the piller. Food can also be delivered from another hand to reinforce this action of the animal taking the piller into its mouth.

A piece of kibble or other hard food item can be placed in the piller. Wet or smearable food can be placed on the outside of the piller. When the animal takes the piller into the mouth, the kibble can be delivered from the piller, the food on the outside will be consumed and an additional preferred food item can be offered as a reinforcer for cooperation. Other less palatable, but safe items can be substituted for the kibble such as bits of carrot (depending on the species), empty gelatin capsules, etc. to help generalize the behavior. Again the goal would be maintain a high ratio of pleasant items in the piller versus unpleasant to help maintain the behavior over time. 2

Training to Accept Injections

Animals can also be trained to accept intramuscular injections without restraint. In many cases this requires having the animal hold a position which allows access to a body part for injection. In some cases animals are trained to present specific body parts on cue, however often target training is enough to get an animal in a desired position. Target training involves teaching an animal to orient a body part towards something. Usually this body part is a nose or beak oriented towards a ball on a stick, a flat palm or a closed fist. Once the animal learns to orient towards the target this can then be used to direct the animal where to go. 3 Animals can also be trained to orient feet towards a designated mat or station. This can also help position animals as needed. In both cases the animal can be trained to hold on the target or station for increments of time to create duration for this behavior. This will facilitate the injection training.

Once the animal has learned to hold the position for a period of time, systematic desensitization and classical conditioning can be used to introduce a syringe and needle with the cap on the needle. The syringe can be gradually moved towards the injection site while being paired with the delivery of preferred food items or other desired experiences.

Prior to making contact with the animal's body it is helpful to use an indicator signal. Often the word "touch" is used just before making contact. This signal offers information to the animal that contact is about to be made and can help prevent a startle response once the animal understands the signal. 4

After repetitions of this it is important to transition from classical conditioning to operant conditioning. Classical conditioning can be helpful if the animal is not trained to accept the procedure until completion

and there is an immediate need for treatment. However it also relies on the animal having strong enough motivation for the preferred food items or desired experiences being offered for it to not respond to the injection procedure and choose to not participate. The benefit of transitioning to operant conditioning is that the animal will learn what action must be presented in order to earn the reinforcer. It will also not be reliant on seeing or knowing what the reinforcer will be and ideally the behavior will gain a long, strong reinforcement history that will help it be quite resistant to extinction when the animal may have less motivation for things such as food, for example when an illness occurs.

To transition to operant conditioning, rather than providing a steady stream of food or other desired experiences, a small pause can occur when the "touch" signal is given and syringe contact is made. This increment of time can be measured and gradually increased to what is deemed necessary to complete the injection procedure. A bridging stimulus can be used to indicate the end of the time increment required for the animal to hold and accept the injection. Reinforcers can be delivered immediately after the bridging stimulus.

Once the increment of time has been established and trained, transitioning to touching with other objects are the next approximations. Usually a needle that has been dulled works well, as does a sharp toothpick. Some medications can sting based on content and volume. This can be simulated by snapping a rubber band against the skin at the injection site. Start with gentle snapping and gradually increase the intensity. Pinching and manipulating the skin are also options to generalize the concept that holding calmly for many sensations result in desired consequences.

For some animals shaving fur or applying antiseptics to the area will be required prior to needle insertion. These should also be considered elements that must be trained. Introducing clippers requires going back to a process of systematic desensitization and classical conditioning and introducing them at a pace in which the animal remains calm and relaxed. The sound of the clippers should also be introduced in a way that does not create a fear response. Odors from antiseptics as well as cold, wet sensations can also create a reaction. Consider introducing these in diluted concentrations at first and in very small amounts, gradually working up to what is required for the procedure.

The first injection should be with the smallest needle possible with a small quantity of saline. Over time this can be increased to prepare for what injections are anticipated. Volume of fluid, needle gauge, pain and number of injections in one sitting are criteria to train for. However if the animal has a long, strong history of positive reinforcement for accepting injections, the occasional injection that is above the normal criteria is often tolerated without much set back in training. Fortunately when behaviors are built through approximations they are also often easily rebuilt should behavior breakdown.

Additional Strategies

Paying close attention to animal body language and avoiding creating fear responses are critical to the success of training these behaviors. Slight indicators of discomfort should cause caregivers to respond by stopping with any activity and waiting for the animal to return to a calm and relaxed state. Pushing the animal even slightly into a state of discomfort will cause the training process to have set backs. This will require repeating the steps in training again. Often the animal becomes sensitized to the procedure and begins to react with fear responses earlier when pushed past threshold repeatedly. Again emphasizing the importance of sensitivity to body language and going at a pace that is dictated by the animal's level of comfort. Going slow will often result in getting the behavior completed faster than if caregiver push to get to the desired result regardless of the animals willingness to participate. In other words go slow to get there fast.

Difficult behaviors often require a high rate of reinforcement. This means small approximations. If an animal is not cooperating it is often because the approximations are too big. For introducing items like syringes generally a steady stream of desired items are delivered (classical conditioning) to create a very strong positive association with the syringe. When switching to operant conditioning the smaller the approximations can be the more clear the communication is for the animal. This transition can sometimes require very small approximations. For example to get an animal to touch a syringe with its mouth the food may be held next to the syringe, then hidden behind the syringe so that the animal might accidently touch it to access the food. This may need to be repeated a few times for the animal to understand it must touch the syringe to gain access to the food. This is then fine-tuned to touching the tip of the syringe to earn the food. Once the animal understands the concept, then the food is gradually phased out as a prompt for touching the syringe and appears only when the syringe tip is touched.

Ideally training to accept oral or injectable medications is a behavior that is trained before the animal needs it. This allows caregivers the freedom to train the behavior at a pace at which the animal is comfortable. This also means allowing the animal to choose not to participate in a session or approximation. This is an important part of training voluntarily participation in medical procedures. Animals need to be empowered to walk away if they so choose. Ironically giving them this power makes it more likely that they will stay and participate.

Training animals to voluntarily participate in medical care attends to animal welfare as much as the prescribed medical procedure itself. Merging veterinary medicine and animal training is a very logical and practical approach to providing high standards in animal care. As these two fields continue to work together the behavioral and physical welfare of animals can only benefit.

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