
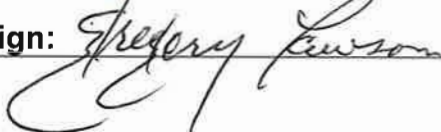




OFFICE OF LABORATORY ANIMAL CARE

Operating Guidelines

OG Number:	310	Positive Reinforcement Training for Primates	Revision #:	0
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PURPOSE:

Develop positive reinforcement training for Non-Human Primates (NHP), as well as the tools, procedures, behaviors, staffing requirements, and certification processes required to properly perform and document this training. This training program will be used to train NHPs to willingly perform desired research tasks and encourage more species- typical behaviors that will benefit animal well-being.

DEFINITIONS:

Training Supervisor: OLAC employee responsible for overseeing NHP positive reinforcement training. Responsibilities will include crafting and modifying training programs, certifying proper training of learned behaviors for monkeys, post approval monitoring and check-ins with the lab to assure proper training methods are being utilized.

Tools of the Trade:

1. Clicker:
 - A single-button training device that produces a consistent clicking sound to indicate to the animal their behavior just prior to the click is eligible for reinforcement. (e.g., desirable food rewards)
2. Target:
 - Any designated object, such as a ball attached to the end of a pole, indicates to the animal where they are expected to station to receive reinforcement.

3. Treat:

- A food reward is used to reinforce an animal for performing the desired behavior or one of the progression steps.

4. Word Signals:

- A specific word (ex-CHAIR) may be used once the behavior has been learned to cue the animal with the desired behavior.
- The Trainers will designate the word.

5. Forceps:

- Long metal or plastic tongs are used to safely offer treats to NHPs.

6. Chair:

- Mobile devices are used to transport NHPs from their home cage to the lab space in which primary tasks are performed, such as cleanings and research recordings.

Procedure:

1. The Training Supervisor reviews the AUP and communicates with the lab to determine the desired NHP behaviors and the training procedures that would be required to achieve these behaviors.
2. The Training Supervisor will assess the baseline behaviors of the NHP to estimate the time needed to achieve the desired behavior, and to formulate a training plan.
3. The Training Supervisor meets with the lab to establish the personnel requirements and to create a training calendar.
4. The Researcher will demonstrate their proficiency with preference testing, clicker training, use of NHP training logs and how to record information.
 - Training for researchers will be performed by the Training Supervisor or a Designated Researcher (a researcher with certified PRT experience, chosen by the Training Supervisor), if they are not already proficient with these noted requirements.
5. Researchers will begin the NHP training:
 - By filling out training records for each training session.
 - Regular check-ins with the Training Supervisor will occur.
 - The Training Supervisor witnesses and signs off on milestones being met as they occur.
6. Modifications to training plans will be created collaboratively between the Training Supervisor and Researchers as needed.
7. Plans for retraining NHPs that regress after reaching milestones will be created collaboratively between Training Supervisor and Labs as needed.

Clicker training:

1. Researchers participating in NHP clicker training must be certified by the Training Supervisor *or* a Designated Researcher as being able to perform and document Click/Treat in an effective, well-timed manner.
2. Train the NHP to associate the clicker with receiving reinforcement for performing desired behaviors.
 - a. The trainer will identify the desired behavior to be trained and what small approximations are expected to be made along the way to reaching the goal behavior.
 - b. A training session document will be created that outlines these steps and criteria for progress.
 - c. Loading the Clicker:
 - The trainer will pair the clicker with the reward by clicking followed immediately by a treat.
 - Repeat this every 30 seconds for 10 minutes, finished by a jackpot to signal the completion of a successful training session.
 - Repeat this training daily until the primate understands that the marker predicts the coming reward (usually 2 sessions).
 - d. Trainers will encourage desired behaviors by providing click/treat at even slightest approximations towards the desired behavior.
 - All click/treat behavior progression will be documented. (e.g. looking at a target (C/T), leaning forward (C/T), moving towards target (C/T).
 - e. Trainers will refine the frequency of clicks/treats (raise the criteria of expectations) as the NHP becomes more consistent with its responses and starts to regularly complete desired behaviors. (e.g. not clicking until NHP correctly touches target, not clicking until NHP moves fully into the chair)
 - f. "Jackpots" will be large amounts of highly valued treats given all at once.
 - Jackpots are used when desired milestones and breakthroughs in more challenging criteria levels are met during training sessions.
 - Jackpot can also be used to end training sessions on a high note.

Preference Training:

1. Treat Preference:
 - a. Before each training session, the primate will be offered three to five (3-5) food treats lined up on a single tray.
 - b. The trainer will observe and create a value ranking of the different options for each day, based on the order the treats are chosen.
 - Two to four (2-4) preference tests will be performed, to confirm if the findings are repeatable.
 - The placement of the treats on the tray should be randomized for each offering.
 - c. The highest value treat will be reserved for "jackpots" and larger advancements in the NHPs training.
 - d. The second and third highest value treats should be used as the regular reward for most training sessions.

Desensitization:

1. Novel Items
 - a. Novel items will be slowly introduced.

- If the NHP reacts poorly to these items, a specific conditioning plan will be implemented over multiple sessions.
- b. General Progression:
 - Item will be left in the housing room at a distance that does not cause alarm calling or anxious behaviors.
 - The item is slowly moved closer to the cage while the trainer ensures the level of anxiety behaviors does not increase.
 - The trainer rewards animals for calm behavior at each new distance marker.
 - Once the item graduates next to the cage, the animal will be rewarded for investigating and eventually touching the item.
 - The item may then be used for its intended purpose.
- c. The Training Supervisor or researcher will be responsible for click/treats as the item is moving closer and the sessions are progressing.

2. New staff and reestablishing relationship after a traumatic event

- a. The Training Supervisor or a Designated Researcher will be present for the initial conditioning process for any new researchers.
- b. Following a traumatic event to a monkey the Training Supervisor will be present for a reintroduction to the monkey, and for any counter conditioning needed.
- c. General Progression:
 - The Training Supervisor or a Designated Researcher will escort the researcher into the room.
 - The researcher will maintain a large distance and will be faced towards a corner of the room in a non-threatening manner.
 - The Training Supervisor or a Designated Researcher will reward the animal as the researcher slowly moves closer.
 - The Training Supervisor or a Designated Researcher will watch for indications of anxiety and mark the distance the researcher will stay at until the animal is comfortable.
 - The researcher will eventually be cage side and offer treats.
 - The researcher will provide non-contingent reinforcers and use parentese to establish/reestablish a relationship.
- d. The Training Supervisor or a Designated Researcher will be responsible for click/treats as the researcher is moving closer/ the sessions are progressing.

3. Cage manipulation and Dividing

- a. Trainers will condition NHP to staff touching and moving different parts of the cage (dividers, locks, etc.).
 - The goal is for the NHP to become comfortable with the dividers being activated before chairing or other activities that require separating cage mates.
- b. General Progression:
 - The trainer introduces the target for the animal to station at, while receiving positive reinforcement.
 - Once stationed at target confidently, the trainer can gently and swiftly touch parts of the cage out of reach of NHP.
 - Animal(s) is reinforced for maintaining a calm body at the target.
 - The trainer will then move to touching parts of the cage in reach of NHP and continue to reward for calm body at target.

- The trainer will eventually begin touching specific parts of the cage (locks, dividers).
- Once the NHP is comfortable with the trainer touching specific parts of the cage, they will then begin to engage cage parts.
- When the trainer is fully able to use cage parts without adverse reactions from NHP.
 - The trainer can separate cage mates without adverse reactions from cage mates.
 - Any signs of anxiety or discomfort will signal the trainer to back up one step in the conditioning process.
- c. The Training Supervisor or researcher will be responsible for click/treats as the sessions are progressing.
- d. Cage mates with signs of anxiety or other adverse behaviors while being separated will require a more specific conditioning plan that will be developed in collaboration with the Training Supervisor.

Behaviors Trained:

1. Target Training

- a. NHP will be trained to touch a target with its mouth.
 - This behavior will be used as a progression step in shifting and holding.
- b. *General Progression:*
 - Condition to target.
 - Move towards the target.
 - Touch target with any body part.
 - Touch target with mouth.
 - Hold position at target location.
- c. This behavior will be taught in small increments over many sessions and the trainer will reward desired behaviors with clicker/treat combo.

2. Shifting Positions within the Home Cage

- a. The trainer will direct NHP to a specific location within its home cage.
 - The lower compartment of the cage being the end goal.
 - This will be used as a progression step to chairing and other behaviors.
- b. *General Progression:*
 - Touching target in one location of the cage.
 - Touching target as it's moved to different locations in the same cage.
 - Moving to and touching the target as it's moved to different sections of the cage.
 - Moving to a lower compartment that would later have the chair attached.
- c. This behavior will be taught in small increments over many sessions and the trainer will reward desired behaviors with clicker/treat combo.

3. Chairing Behavior

- a. The trainer will direct NHP to shift from their cage to the chair and from the chair to the cage.
- b. *General Progression:*

- Condition to chair (starting from chair being placed in room and progressing to the chair being attached to the cage).
 - Move towards the chair.
 - Touch chair.
 - Move partially inside the chair.
 - Move completely inside the chair.
 - Move into the chair and close the door behind the NHP.
 - Move into the chair, close the door and have the NHP present its head in the proper location to be locked in place.
 - Move into the chair and lock it into place and roll to room to perform work/cleaning.
 - Return from work and move itself from the chair back into the home cage.
- c. This behavior will be taught in small increments over many sessions and the trainer will reward desired behaviors with clicker/treat combo.

Trust Bank:

1. Explanation:

- a. The Trust Bank will track all positive and negative interactions each trainer has with each monkey, with the goal of having more positive interactions than negative ones.
- b. Within each monkey's training plan there will be a tab to track and update the trust bank with their trainer.
 - This will include a key that defines what is considered "deposits" and what would be "withdrawals". (ex. Giving treats (positive interaction) is a +5 deposit, giving an injection (negative interaction) is a -25 withdrawal.)
 - Unanticipated Aversive: Consult the Training Supervisor or Designated Researcher to gauge what value to withdraw.
- c. Monkeys with multiple trainers will have a separate trust bank for each trainer.
- d. Using a currency of positive (deposits) or negative (withdrawals) interactions to build or deplete trust with animals.
 - The resulting balance will be tracked daily and extra positive interactions with the monkey will be implemented when the trust bank balance is low.
- e. The trust bank will be updated after every interaction with the monkey.

2. Implementation

- a. Each trainer should aim to maintain a high positive balance in their monkey's trust bank.
- b. Procedures that require large withdrawals should be anticipated and prepared for appropriately.
 - This would include building up a large positive balance in the days leading up to the adverse event.
 - Then making extra effort in the days following to restore that trust bank to a high net positive.
- c. Researchers that must perform adverse events with monkeys they do not have a high balance with can be accompanied by researchers that have a high balance with that particular monkey.
 - This will help reduce the monkeys' stress during the event.

Onboarding/ New lab staff/ Retraining:

The Training Supervisor or Designated Researcher will train all new lab members as part of the on-boarding processes and retrain lab members as needed. Check-ins and recertifications with the Training Supervisor will be done as needed to confirm proper techniques are being used and to ensure the safety of both NHPs and researchers.

Post approval monitoring/ check-ins:

1. Training supervisors and trainers will create schedules for post approval monitoring of lab staff on NHP positive reinforcement training.
2. The schedule will consist of check-ins every week for four (4) weeks.
 - Then every other week for four (4) weeks.
 - Then once monthly until otherwise directed by IACUC. (e.g. meetings to discuss progress/roadblocks, reviewing training records, observation of trained behaviors and/or training procedures)

REVISION HISTORY			
REVISION NUMBER	AUTHOR(S)	EFFECTIVE DATE	REVISION(S)

