
Pole-and-collar training of macaques: a discussion by the Laboratory Animal Refinement and Enrichment Forum

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May 15, 2005—"I am currently pole-and-collar training one of our adult pair-housed rhesus females and hope to get her to graduate to the chair in the next few weeks. Winnie remains sitting when I move the pole towards her but squirms when I try to actually attach the pole to her collar. So far I have had no success in achieving this crucial training step. Can anybody offer some advice how to get over this hurdle" (Down).

"The adult rhesus monkeys with whom I have worked also went through an initial period of resistance when the pole was being attached and also when they were then put into the chair, even though I had spent a lot of time desensitizing them both to the pole and to the chair. But they finally did settle down and cooperated.

To start the training I always first made sure that the trainee was so comfortable with me that she took treats from my hand. I then included the pole, offering treats with one hand while holding the pole close to the cage in the other hand. The animals usually got used to this little ceremony very quickly and quasi-ignored the pole while focusing more on the treats. I then placed the treats on the pole and carefully inserted it through the mesh and waited until the monkey took the treat as a reward for accepting the pole as a neutral object. I should mention here that the training did not imply any enforced restriction. No squeeze back was used. The trainee had control over the situation.

The first few times the pole was actually attached to the collar was often quite dramatic. The trainees usually freaked out the moment they realized what had happened to them. But there was no reason for panic. I simply left the pole attached and talked reassuringly to the animal who gradually calmed down, stopped squirming and remained quiet long enough so that I could gently unhook and remove the pole. This was followed by a generous treat reward which was never refused.

During the next sessions I got the trainee to sit still with the pole attached to her collar for progressively extended periods of time, until she seemingly forgot all about the pole and took treats from me. I repeated this step until I got the impression that the trainee was comfortable with it.

Coaxing the poled animal to get out of her cage was always a big challenge. After all the familiar home cage is a relatively safe haven for these animals. But with patience and many reassuring words, the trainee finally stops resisting, follows the pull of the pole and allows me to lead her on top of the restraint chair. I let the animal sit on the chair for a couple of minutes before leading her carefully back into the home cage, and remove the pole. A treat reward and a lot of praise follows instantaneously. I am repeating this very important step several times on different days until the trainee cooperates without noticeable resistance and sits quietly on the chair.

The final step is usually not a big deal. The animal's position is adjusted so that she sits in the chair and the pole is exchanged with the short chain, attaching the collar with the chair.

It must be emphasized that the trainee is never punished in any manner, but cooperation is constantly rewarded with a treat and with praise. If the animal doesn't cooperate, patience from my part replaces the reward.

I have found that each "big step" always involves an initial struggle. But I have also found that with consistency and patience, the animals learn quite quickly what I expect them to do. I have a female who is fully trained and just comes up to the front of the cage without being squeezed and actually will move her collar so the loop is exposed for me to attach the hook of the pole. This monkey also struggled a lot when I first started working with her. It is amazing how these animals can gradually relax into the training sessions and finally start working with rather than against you. I guess trust in the trainer is the ultimate key for success. These monkeys are smart, and when they are free of apprehension or fear quickly figure out that it is much easier plus rewarding for them to cooperate with you rather than resist.

I have one male who is still apprehensive even though I worked with him for a long time. His training was quite a challenge and he had setbacks many times. He still needs to be squeezed up a bit, but will then voluntarily bend his head down and "present" the collar for the pole.



Figure 1. Rhesus male presenting his collar to the pole. (Photo by Michelle Walsh)

When I train my animals, I work with them daily 5 days a week until the goal of the training has been achieved. If I don't work with them on a consistent schedule, they seem to get rusty really quickly. The faster you can get them over the initial struggling, the easier will be the whole training. If you try to pole a monkey who vigorously resists on a Monday and decide to wait and try again on Friday, chances are that the struggle will be all the same. But if you are persistent and repeat this training step over and over again every day, you will definitely notice progress by the end of the week. I would imagine that without consistency and a lot of patience the training of these monkeys can be quite a frustrating experience, both for the trainer and for the trainee" (Walsh).

"Let's face it, pole-collar-chair training is (1) not easy, (2) can be dangerous if not done correctly and (3) can tick the monks off right at the beginning. However, it can also be very rewarding for both trainer and trainee. Working with the animals once, preferably even twice a day, five to seven days a week is a very good way to go. Consistency but also compassion are important ingredients of a successful training. For me and my rhesus monkeys, the following training strategy has proven to be practical and effective:

1. Desensitization to the collar and pole is very important because it helps the trainee to feel relatively relaxed during the sessions. Monkeys are not into jewelry, so the collar is no fun at first. I've always collared my animals at least two weeks ahead to allow them get used to wearing a collar all the time. If they're not comfortable with the collar, it really sets you back because they will spend most of their time pulling at the collar and scratching their neck. Getting the monkeys to understand that the pole is not an object of torture can be a challenge. I have found my own trick to help the animals quickly overcome their fear. The poles come with that handy little clip that opens and closes for collar attachment. The clip is a great place to hook treats which the monkey can retrieve directly from the "dreaded" pole. I stuff a Fruit Loop or a marshmallow tightly into the clip. This makes it a little harder for the animal to get the treat and extends the time the animal is in contact with the pole. Once the treats are retrieved consistently without signs of apprehension or fear I start moving the unbaited pole very carefully in the cage and, finally, also touch the animal gently with it. In subsequent sessions I gently touch the collar with the pole, and when I am done hang the darn thing on the front door of the cage overnight so that the animal gets more and more acquainted with it. Needless to say that extra rewards jackpot if you feel it's deserved - always are distributed at the end of a session.
2. The next step of the training can be very tricky. So far, I didn't have much luck getting a monkey to come voluntarily to the front of the cage, present her/his collar so that I can attach the pole to it. I always use the squeeze back to gently coax the trainee to the front of the cage where I briefly immobilize him or her, attach the pole to the collar and then very slowly release the restraint a bit. It seems almost inevitable that the trainee gets extremely fidgety and tries to escape the moment he or she realizes that the pole is actually attached to the collar. I let the animal calm down even if takes a few minutes and only then open the cage door and lead her or him firmly but gently out into the center of the room, which of course is closed off to other people. It takes a few sessions until the trainee feels confident enough to walk - rather than struggle - on the pole and pick up treats from the floor.
3. Here's the part that not many people like, because it involves negative reinforcement. You cannot allow the animal to freak. Should the animal begin to thrash about, I take the pole and carefully but firmly push the animal's head to the floor. To be clear here, I do not throw him or her down, but rather use the pole to turn the collar up towards the animal's head and then apply some forward and downward pressure in a determined manner. The monkey is now fixed and can get his/her bearings while being safe from causing any serious problems such as getting injured while

jerked around. I have noticed over and over again, that you can help the animal to calm down quite quickly when you speak to him/her reassuringly with a gentle whisper-like voice. When the animal has settled down, I carefully start to walk him or her again. It takes about one week to get a monkey to walk on the pole in a reasonably calm manner plus pick up treats from the floor as a reward for good behaviour.

4. Now, onto the chair. First, push the chair up against a wall with the opening facing out and put all the brakes on. This keeps the chair stable and makes it impossible for the animal to walk straight through, a situation that is really not fun when you're on the other end of the pole. Allow the monkey to explore the chair, touching it, climbing on it, walking around it and perhaps retrieving a treat that you have placed somewhere on the chair. After a day or so coax the monkey into the sitting position in the chair, and don't forget to reward cooperative behaviour. Gently lift the neck into position and get the collar into place. This segment of the training can be extremely stressful, so do your best to maintain a calm attitude as well as a compassionate but firm hand at all times. If another person who is also on very good terms with the trainee can help you, the situation becomes less of a challenge, especially when you are dealing with one of these incredibly strong and sometimes extremely stubborn guys.
5. Once you've got your dude in place, let him adjust for a few minutes. Don't forget the treats! Some animals will be initially restless and try to push your hand away, but with gentle patience they will all settle down and finally accept your food reward. Gradually extend the time the trainee remains in the chair, with you always being close by serving as a comforting social support. A successfully trained monkey will have developed so much trust in you that she/he will never fight against you when you pole and chair her. Try not to become lax during this final but crucial step of the training. There should be no backsteps unless major problems develop in association with the chairing experiment, such as self-injurious biting.

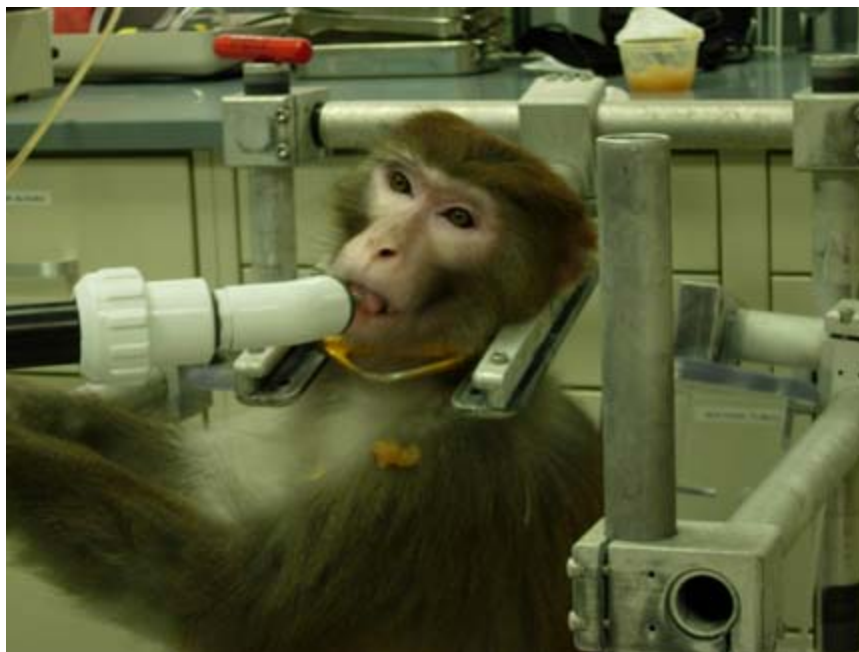


Figure 2. Rhesus male being rewarded with fruit juice for sitting calmly in the restraint chair. (Photo by Michelle Walsh)

If you have little experience, training monkeys can be very intimidating in the beginning, but with sufficient time, good knowledge of the trainee's personality, plus lots of patience and compassion it is possible to teach almost any monkey tricks. To successfully pole-and-chair train a monkey is not necessarily a very time-consuming process. My quickest subject

took all but five days of consistent daily training to reliably cooperate. He was two years old and an angel! But I have had some tough customers who have taken me well over a month to get going, especially cranky older females who can be very stubborn and hard to food-motivate. Also, I have had some animals who were just never meant to be put in a chair. This is a reality that you and the investigators must acknowledge. You cannot force a monkey to cooperate and be relaxed in the chair. It's impossible. Sure, you can try, but you're not going to win" (Skoumbourdis).

"To hook treats at the end of the pole is a great idea! We usually do a balancing act with items we put on the pole or use dry fruits that we can quasi-stick on the pole. Your idea is much better, enticing the trainees to spend a little bit more time retrieving the treat, thus allowing them to get even more comfortable with the pole.

I am fairly new to this, but in my experience, getting a poled monkey out of the cage and then "walk" rather than squirm and thrash about is a tough one and, so it didn't work for me. You are absolutely right about applying downward pressure if the trainee starts to struggle. I always would remember "downward pressure!" if things are getting out of control. I found, after struggling a lot with muscling these animals around the room on the pole, that it is easier for me and kind of beats them at their own game, to have them move from their home cage directly into the chair, and vice versa. So there is no walking-struggle involved, but you have to be careful with neighboring monkeys below or above the cage of the subject you are working with. I temporarily block the view of those monkeys with cardboards, otherwise they would grab at the trainee while I am trying to get her or him into the chair" (Walsh).

"I understand your uneasiness about walking the poled monkeys around the room. Believe me, I've learned my lesson a couple of times moving animals in small spaces! That climbing instinct can really hinder what you're trying to do! I always want to get them to walk because after they come out of their cages - or out of the chair - they have a lot of pent-up energy that they like to release, especially the smaller guys. Their legs get cramped sometimes and they really seem to like the opportunity to stretch. But, I treat this as a reward for good behaviour. If they can calmly walk around, I let them do that, but if they start playing "super man" I pull them straight back into their cages. If you don't have enough space, or the racks are enticingly close for climbing and rattling cages, or if you are a little new at this and do not have a second person around who can help you control the monkey if need arises, the pole-walking isn't a good idea" (Skoumbourdis).

May 31, 2005—"I have been working with Winnie now for about 2 weeks and both of us have come a long way. A few things that helped the progress of the training were that I did everything possible to create a quiet environment with no reason for distraction both for the trainee and for me. I turned off the radio, removed all toys from Winnie's cage, removed the drop pans, locked everybody out of the room and turn off my walkie-talkie. No one else exists but me and the monkey.

We have gotten to the point where she will spontaneously come into the tunnel, and I can close the cage door without her turning around trying to go back. She sits quietly right in front of the pole without a trace of suspicion towards me. She even allows me to touch her collar with the pole, but when I take the next step and attach the pole to the collar she freaks out most of the time. I let her calm down, remove the pole and release her back into her cage.

Should I still "click" when she's calm, remove the pole and try to offer her a reward? She will most likely want to attack/grab me rather than accept a treat. Once I've released her, is the session over? Should I try to pole her again or wait until the next day? (Down).

"In this situation I would resort to patience and simply wait until Winnie has calmed down so much that she will finally take a treat from you as a reinforcing reward. You may have to wait 15 minutes, one hour or perhaps even longer, but you always want to finish a session with the animal being on good terms with you. This will set the tone for the next training session. Once she got her treat, I would let her go home, give her again a food reward and cancel any further training attempts for the day" (Reinhardt).

"Yes, take as much time - and patience! - as needed for Winnie to calm down and take a treat from you. If she stubbornly refuses, you can simply place the treat on the cage floor. Chances are then much higher that she accepts the reward because she can take it at her own will. I would also suggest not to pole her again during or right after a training session that was frustrating for both of you. If it's the morning run, wait until afternoon and try again. If it's the afternoon session, wait until morning. Should this happen to you on a Friday, make sure that you'll be able to make it in on Saturday for another round. It will be easier for you and her to keep going rather than backtracking and waiting until Monday" (Skoumbourdis).

June 8, 2005—"We are making good progress. Winnie allows me now not only to touch the collar with the pole but also to actually attach the pole to the collar. We went through this little procedure several times, today being the third time. She was perfect! I attached the pole and she just sat there taking treats from me. She knew the pole was attached because I would move her closer and then farther away from me. WOOHOO! Even with her cage mate and all the other monkeys of the room watching, she was so good!

So far it's been that she presents her neck in a way she hooks herself on the pole. If I try to do this, she jumps away the moment I get the pole just in the right position and she then pushes the pole away. Initially I thought I was poling her, it turns out she is poling herself. The problem is that it sometimes can take over 20 minutes to get her do this" (Down).

"I guess that's not really a problem. If Winnie wants to be in control and pole herself, that's fine, even if it takes one hour. Yes, when you train an animal you have to be the 'director' but the animal is the 'actor', that means the animal has to have the space to determine the time schedule. After all you want something from the animal not vice versa. I know the reality in the research lab can be extremely frustrating because animal care personnel is usually put under quite a bit of time pressure by people who have little or no first-hand experience with animal hands-on procedures" (Reinhardt).

"I feel lucky because I am not under time pressure when pole-and-collar training rhesus macaques. In fact, my approach is a bit time consuming, but my animals always end up being very cooperative. The bottom line is that I allow the trainee to habituate to each training step slowly and incrementally. I reward with consistency everything a trainee does in the right direction. Every session ends on a positive note, even if it involves going one step back in the protocol and rewarding something that the animal has already learned in a previous session. Before I leave the room, the trainee gets a bunch of healthy treats, which are always welcomed. Importantly, I let the animals set their pace for training. Only when they seem comfortable with a step do I move on to the next. Some are really slow, others amazingly fast" (Buckmaster).

June 27, 2005—"Winnie and I have been working together 3 times a day for about 20 minutes each session. In the beginning there were sessions when I could move the pole very close to the collar, but Winnie moved away just the moment I was ready to get her hooked. No reward but some encouraging words before leaving her for the day" (Down).

July 7, 2005—"Winnie presents to the pole and actually touches the tip of the pole with her collar with no problem, but it often takes quite a while to get her motivated to work with me. She seems to work better at mid-day than in the early morning. Maybe she's just not a morning monkey, just like me!

We are still struggling with the next step. Often she won't allow me to attach the pole to her collar without freaking out, although within only a few seconds she'll calm down and start working with me again. At other times she doesn't object at all to being poled. On these occasions I reward her as if it were her birthday" (Down).

July 12, 2005—"There were moments when I was absolutely frustrated and wanted to give up. I am glad that I didn't because we have finally achieved the goal. Winnie comes now into the tunnel and presents her neck to me so that I can attach the pole to her collar. She does this with no problems (better not be jinxing myself!). As long as the loop on the collar is visible - sometimes it's not - I can pole her within a minute. Needless to say that I reinforce her cooperation consistently with praise and a food reward. The next step will be the chairing. Winnie is used to touching the chair and playing with it, but not sitting in it" (Down).

"For many years we pole-and-collar trained rhesus macaques with difficulty. I finally persuaded the users that it was possible to chair-restrain the animals without the pole.

When the animals arrived they were fitted with a collar, which could be attached to a chain with a 2-inch diameter ring that was used to catch an animal with the gloved hand. The monkeys were 15-18 months old males who did not yet have incisors that could jeopardize my safety in case an animal would bite my heavy gloved hand. During the first training sessions I used the squeeze back to bring the monkey forward and attach the chain to the collar. I slid the chain through the gloved hand and gently pulled the animal to my hand until I could firmly grasp the ring. The animal was then coaxed into a restraint chair which was placed as near to the cage door as possible. Once the monkey settled down I offered a treat, which was usually declined, and released him back in his home cage. This was repeated several times on different days until the animal started to take the treat rewards. I then gradually increased the time the trainee would calmly sit in the chair. After each session the animal received a food reward. By the end of the second week I could put the chain through a ring mounted on the chair and gently draw the animal to the chair without me handling the monkey any longer.

To work with trained animals considerably reduced, or perhaps even eliminated, the stress associated with the conventional chairing method, but it also avoided much of the stress that we had encountered during the pole-and-collar training. It should be underscored that I worked with young animals. To apply this technique to adult macaques would bear a high risk of being injuriously bitten" (Francis).

"To bring this discussion to an end I would like to emphasize that we have to make it very clear to investigators who want us to train their animals that we cannot guarantee to be successful in all cases. Animals are not predictable machines. Yes, most monkeys can be trained but some cannot, or let's say they should not be trained because their personality - which is presumably conditioned through negative experiences with people - is very difficult to deal with. A monkey who persistently resists during positive reinforcement pole-and-collar-chair restraint training is not a suitable candidate for research involving chair restraint. No investigator would benefit from having his/her research subject forced into an experimental situation such as chair restraint. The data collected from such an animal would be of little or no 'scientific' value." (Reinhardt).

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Published in Animal Technology and Welfare 4(3), 157-161 (2005).